Montana Outdoors

MONTANA FISH, WILDLIFE & PARKS | $4.50

SEPTEMBER-OCTOBER 2023

PROBLEMS FOR PRONGHORN

Working to get struggling herds back on their feet

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VENISON FAT YOU *CAN* EAT

WHO CLEARED THESE FOREST TRAILS?

HUNTERS: IT'S TIME TO POLICE OUR RANKS

Montana Outdoors

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Montana Outdoors

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36 The Farm-Wildlife-Access Bill An essential investment in rural America's agricultural producers and grassland wildlife. *By Andrew McKean*

A GOOD MORNING A hunter and his dogs head out across a stubble field in Yellowstone County in search of sharp-tailed grouse after an early season snow skiff. See page 12 to learn how to find these native birds throughout the season. Photo by Nathan Cooper.

COVER Pronghorn populations are struggling in many parts of Montana. An FWP study featured on page 30 is looking for reasons the prairie speedsters aren't doing as well as expected. Photo by Kerry Nickou.

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One big buffalo

I wanted to give a great big shout-out for your excellent and timely article on suckers ("Read Our Lips," May-June). My family is fascinated by the bigmouth buffalo, and not long after publication I caught this "little" beauty (at right) on Fort Peck Reservoir on a Rapala crankbait. It weighed 30 pounds and measured 37 inches. Pictured is my son Grant who helped me lift and hold the fish, before we released it to continue growing. Say, any idea how old this fish might be? Thanks again for educating us on these and other sucker species.

Sarah Carson
Helena

Editor replies: What a buffalo! FWP fisheries biologists estimate that your fish might be around 80 years old. But they note that there's no way to accurately determine age other than by checking the otoliths. These are the small calcium stones in a fish's inner ear that grow rings, like a tree, each year. Otoliths can be harvested only if you kill the fish. Size does not necessarily reflect age, but your fish is far bigger than the 112-year-old Minnesota fish shown in the article, though not nearly as large as the 57.75-pound Montana state record, much less the Wisconsin-caught world record (73 pounds, 1 ounce). Note also that the world record bigmouth buffalo was only 1 inch longer than your fish but weighed more than twice as much. To see that aquatic monster, search the internet for "world record bigmouth buffalo Wisconsin."

Canadian sucker fan

Yesterday while fishing the Oldman River in southwestern Alberta, I was crossing the tailout of a nice run and looked down to admire the brick-red rocks at the bottom of the stream. Then the rocks began to move! I suddenly realized that they were male longnose suckers, spawning with their

"handsome red body stripe" as you describe in your article on suckers. It was a beautiful sighting of an important native fish, and I appreciate *Montana Outdoors* for reminding me that the longnose and other sucker species are swimming in our regional streams and rivers for anglers and others to enjoy and appreciate.

Rob Buffler
Canmore, AB

And one from Helena!

Last night I read the article on Montana suckers. As always, a great article, and I loved the focus on increasing respect for this amazing family of fish. Interestingly, and timely, I caught my first white sucker on a fly a couple of weeks back. And, contrary to popular response, I was really excited about the catch.

Eric Merchant
Helena

E-bikes are motorized vehicles

I enjoyed the mountain bike article ("The Queen City's Ride to the Top," July-August), which included the historical development of mountain bikes. But the development portion stopped short of discussing the latest trend in biking: electric bikes. E-bikes have made it possible for many riders to get back on the trail, but many users don't know that their vehicles are designated as motorized and are allowed only on trails open to motorcycles and other motorized vehicles.

To allow for more e-bike use, regional managers for state and federal land management agencies can designate specific trails for e-bike use. But until that happens, e-bike riders should know that they are in violation of state and federal laws when they ride their e-bike on a road or trail closed to motorized vehicles.

Tony Petrusha, Executive Director
Libby Outdoor Recreation Association

Too many for a remote wilderness campsite

On the back cover of the July-August issue is a wonderful photograph of a high mountain lake somewhere in the Absaroka-Beartooth Wilderness, with a group of adults camped on the shoreline. However, as a former wilderness manager and longtime backpacker, I was dismayed and disappointed at what the scene portrayed.

I count at least 12 campers and five dogs, all camped at the lake's edge with a fire pit and a campfire. Members of that group, and others who backpack in large groups with dogs, would have done less damage to the wilderness resource if they had divided into smaller groups and set up their camps farther back from the lake edge. This seems like another example of people loving our wilderness to death.

David Turner
Helena

Where are the pronghorn?

I have noticed a precipitous drop in the antelope population over the past few decades, especially in the eastern part of the state. The animals just aren't there like they once were. This, of course, is reflected in the number of tags that FWP makes available to hunters each year, as well as the successful draw numbers and harvests. I suspect there are several reasons for this decline, including climate and habitat change and human interactions. I would sure like to see a *Montana Outdoors* article that tracks the history of antelope in this state and the factors that are responsible for the current population decline.

Chuck Tarinelli
Belgrade

Editor replies: According to FWP records, the statewide pronghorn harvest over the past two decades or so was 29,128 (2004), 6,029 (2014), and 9,659 (2022). The biggest known factor driving that decline is the severe winter of 2010-11, which decimated many herds. But no one knows why many of those populations have not fully bounced back. See our story on page 30 on a study conducted by FWP wildlife scientists to better understand what is happening to Montana's pronghorn. For information about pronghorn natural history and various hunting tactics, see the 2006 Montana Outdoors *article "On Montana Safari" at https://bit.ly/3JSLPJO.*

Venison Crépinettes with Pistachios and Apricots

By David Schmetterling | Preparation time: 45 minutes | Cooking time: 20 minutes | Serves 4–6

Unlike that of pork and beef, most venison fat is inedible. But venison caul fat (also called crépine or fat netting) is the exception. This is the beautiful, lacy, delicate fat that surrounds the organs of ungulates like deer, pronghorn, and elk. It's delicious.

Caul fat is such a succulent delicacy that it's worth taking a few extra minutes to harvest it from the carcass in the field. Here's how:

1. After cutting through the hide and body wall from the sternum to the pelvis, look for the white, lacy caul fat surrounding the stomach and other organs.

2. Using your rubber-gloved hands (no knife needed), carefully pull the delicate membrane away from the innards, trying to keep it in one piece (though ending up with a few large pieces is fine).

3. Try not to get blood on the caul fat.

4. Once the caul fat is removed from the animal, it will still be very warm. Hold it up in both hands for a few minutes to cool in the air.

5. Finally, ball up the caul fat and put it into a game bag, separate from any meat or blood.

The author's wife and hunting partner with caul fat from a whitetail buck.

Once home, soak the caul fat in a bowl of cool water to get rid of any blood, grass, or pine needles. Then pat it dry, vacuum seal, and freeze. To thaw, put it in a bowl of cool water and it comes back to life. Pat dry again before using.

To cook with caul fat, wrap it around a roast or tenderloin, or even burgers destined for the grill. It adds taste and texture to all cuts. The fat gradually melts as it cooks and makes the meat beneath tender and juicy. It's the same concept as "barding" meat by wrapping it in bacon.

You can also use caul fat like casing to wrap around ground sausage. This makes what's known as a "crépinette," which is the recipe at right, adapted from one on allrecipes.com. ■

—David Schmetterling is FWP's statewide fisheries research coordinator.

INGREDIENTS

1 lb. coarsely ground venison (pronghorn, deer, or elk)
½ lb. pork fat
2 t. kosher salt
1 t. black pepper
Pinch of cayenne pepper
1 t. very finely sliced fresh sage leaves or ½ t. dried, crumbled leaves
¼ c. chopped pistachio nuts
2 T. diced dried apricots
½ lb. caul fat
White wine
Vegetable oil for frying
2-3 T. butter for sauce

DIRECTIONS

Gently mix salt, pepper, cayenne pepper, sage, pistachios, and apricots together in a mixing bowl with a fork until just combined. Add the dry ingredients to coarsely ground venison and pork fat. Mix gently to evenly distribute ingredients.

Divide into 4 portions and shape into patties about ¾ inch thick.

Lay patties on the large sheet of caul fat, trimming the fat into pieces about 2 or 3 inches larger than each crépinette patty. Wrap each patty in the caul fat with the ends tucked underneath so that the patty is completely covered.

Place patties on a plate and cover with plastic wrap; refrigerate overnight.

Heat 2 T. vegetable oil in a skillet over medium heat. Place crépinettes in pan, smooth side down. Let brown 3 or 4 minutes on each side (they should develop a beautiful, caramelized glaze). Blot some of the rendered fat with a wadded-up paper towel. Pour in a splash of white wine and cover.

Cook covered until the patty interiors reach 145 degrees F., or another 5 minutes. Uncover and flip crépinettes to coat with the pan brownings, then cook another minute to reduce the wine.

Turn off heat, remove crépinettes, and add butter to the pan. Mix the butter and pan drippings and spoon the sauce over the crépinettes. ■

FROM TOP: SHUTTERSTOCK; DAVID SCHMETTERLING

We see it, and we're on it

One of Montana's most important blue-ribbon trout rivers is in trouble—and has been for some time. Fish surveys by FWP crews show that trout numbers on the Big Hole have been dropping for more than a decade. Several stretches, like the Jerry Creek and Melrose sections, are now at or near historic population lows. In addition, our fisheries crews are finding few young trout, indicating poor reproduction. They and others also report dead and dying trout, many with fungal growths.

Anglers, guides, and fly shop owners are understandably troubled. So am I, along with everyone else in this department. The Big Hole is a world-renowned fishery that for decades has been a recreational mainstay for local and visiting anglers, and the economic lifeblood for people throughout the basin and surrounding areas.

Making things worse for this region, trout numbers on two other important rivers, the nearby Beaverhead and Ruby, are dropping.

What's causing the declines? We don't know, but we aim to find out.

What we do know is that there's not enough water in the rivers and their tributaries—which is where many mainstem trout reproduce—and the water that is there is often too warm in late summer for trout.

Fishing the Canyon stretch of the Big Hole River below Divide.

Our plan to address the issues on the Big Hole, Beaverhead, and Ruby has three main features.

One, we're working with Montana State University to figure out why more adult fish aren't surviving, as well as young fish produced in tributaries that feed the main rivers. Is it low flows, warming water, disease, or some combination of these and other factors?

We will also figure out why so many trout are unhealthy. We've already set up a web portal—sickfish.mt.gov—where ranchers, anglers, guides, and others can report ailing, deformed, or dead fish and upload photos to help aid biologists. FWP will continue to share what we learn in the coming years about trout in the three rivers.

Two, we will intensify the work we have been doing for more than a decade with local ranchers and other landowners to keep more water in spawning tributaries and mainstem rivers, especially at critical times. Sometimes all it takes is a little extra water for a few weeks to allow newly hatched fish to swim downstream to the mainstem, enough so they do not get trapped in shallow pools and become easy prey for birds. Our past focus on water conservation in the basin has been mainly to protect Arctic grayling while supporting agriculture. Now we're widening the scope to include brown and rainbow trout.

Three, while our crews continue traditional and essential management activities like population monitoring, I'm encouraging FWP employees and others to think of new ways to solve the problems we do know about.

For instance, we're looking into whether some irrigators who have water rights on cooler tributaries might be willing to let some of their water flow into the Big Hole River in exchange for the same amount of warmer Big Hole water upstream. That warmer water would not hurt their alfalfa, but the cooler water would help trout.

Montanans have long been innovators in coldwater fisheries management. We lead the nation in wild trout management, whirling disease research, and grayling conservation. I'm confident we'll continue to come up with new innovations as scientists learn more about what's afflicting the trout populations in the Big Hole, Beaverhead, and Ruby rivers.

Like so many Montanans, we at FWP care strongly about these three fisheries, the health of the surrounding watersheds, and the businesses and livelihoods sustained by those ecosystems. We recognize there are problems, we have a plan to figure out what's causing the problems, and I'm confident we can work together with outfitters, anglers, irrigators, and others to find solutions.

—**Dustin Temple**, *Director, Montana Fish, Wildlife & Parks*

JASON SAVAGE

THOM BRIDGE

MISTER FIXIT

LARRY LYTLE
AIS Equipment Manager, Helena

MY MAIN RESPONSIBILITY is to track, maintain, and repair equipment used by the FWP Aquatic Invasive Species (AIS) Program crews. That includes 36 mobile wash units, nine camper trailers for housing inspectors in remote locations, 28 highway reader boards, and other odds and ends used at the 19 AIS check stations across Montana.

For the wash units, which inspectors use to spray boiling water to decontaminate boats and other watercraft, I fix the electronics, replace heating coils, change the oil, and repair the small engines. (Helping me out with a lot of this work is Steve Miller, a retired auto mechanic.)

For the reader boards you see along Montana highways, I replace batteries, fix axles and wheels, do computer updates, and sometimes even rebuild the units when they get blown over by big wind gusts or hit by vehicles. I also install and maintain the solar panels on check station sheds and do administrative tasks like procurement and writing contracts.

I travel a lot, visiting check stations statewide to make whatever repairs they need. For instance, yesterday I was in Ravalli, Thompson Falls, and Troy. I also haul the washers to FWP hatcheries when they need to do decontaminations.

I grew up in Helena and after high school became a radioman with the U.S. Navy. That's where I learned electronics. After my tour of duty, I did all types of work including auto mechanic, autobody technician, deputy sheriff with Lewis and Clark County, owner of a private security company, charter bus driver, and truck driver for food supply companies.

I wasn't ready to retire—I'm in my 70s—so I worked the AIS check station at Canyon Ferry Reservoir for a few years. When my supervisor found out I could fix about anything, he encouraged me to put in for this position.

I like everything about this job, especially being a part of the AIS team and the great people I work with. I'm proud to say the entire program received a Governor's Award of Excellence in 2020.

Most of all, as an angler I'm passionate about helping protect Montana's waters. We're one of only five states in the Lower 48 without zebra and quagga mussels, and because the Continental Divide runs right through Montana, we're on the front line of defense for keeping those invasives out of the Columbia River Basin—not to mention all of Montana's other waters.

SNAPSHOT

Missoula resident **Laura Verhaeghe** was driving along Huckleberry Pass between Ovando and Lincoln one late-October morning when she spotted a single tamarack (American larch) with its needle-like leaves turned golden before any of the other surrounding tamaracks. "I liked the isolation of that one tree in the misty forest and composed the shot to emphasize its loneness," says Verhaeghe, a part-time professional photographer who works as a lands program specialist for the Rocky Mountain Elk Foundation. ■

445 Total amount, in thousands of dollars, that FWP pays each year to Montana counties in property taxes for wildlife management areas, state parks, and other lands.

Conservation License now required

Kayakers, boaters, dog walkers, hikers, and others who use fishing access sites (FASes), wildlife management area (WMAs), or many other state lands but don't have a hunting or fishing license now need to purchase a Montana Conservation License.

The 2023 Montana Legislature passed a new law that requires, beginning July 1, 2023, everyone age 12 and older to possess the license to access most state lands.

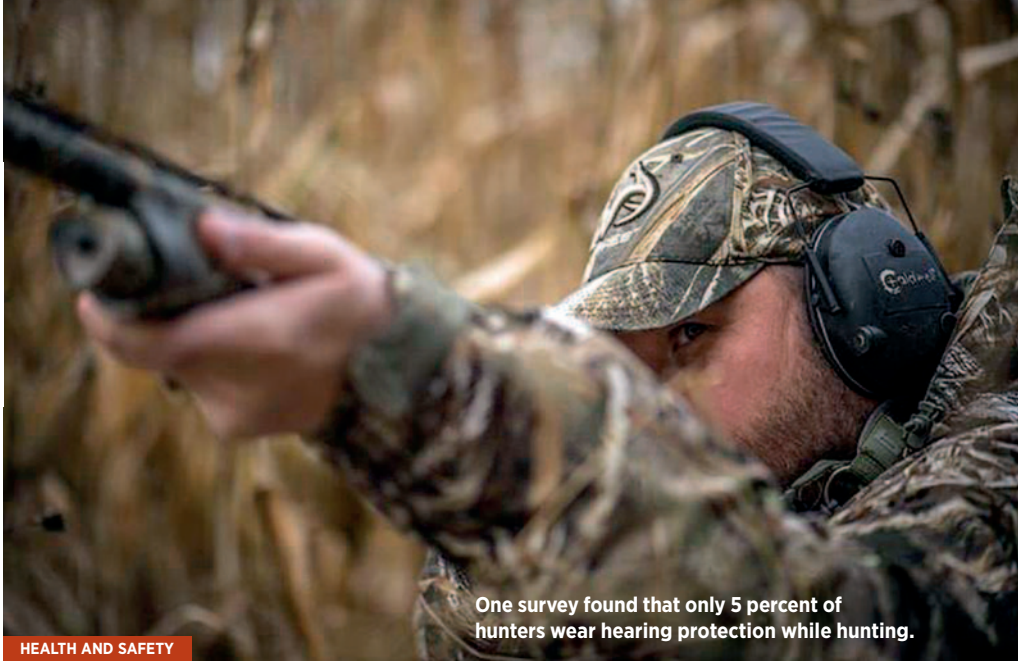
Previously, only hunters and anglers were required to purchase a Conservation License. Now all types of recreationists need one if they use FASes, WMAs, and Montana state trust lands, though not Montana state parks.

During the first year, FWP game wardens will inform users of the new license requirements. Beginning March 1, 2024, recreationists on state recreation lands not holding a Conservation License may be issued a written warning upon a first offense. Subsequent offenses may be cited.

The license costs:

- Montana resident adult: $8
- Montana resident youth (age 12–17) and apprentice hunters age 10-11: $4
- Montana resident senior (age 62+): $4
- Nonresident: $10

New revenue from the Conservation Licenses will be used to maintain and conserve FASes, WMAs, and other state recreation lands. ■



One survey found that only 5 percent of hunters wear hearing protection while hunting.

HEALTH AND SAFETY

Listen up: Time to consider ear protection for hunting

Every time you shoot a firearm, your eardrums are assaulted, say hearing experts. Over time, the cumulative damage results in noise-induced hearing loss (NIHL), which can require wearing hearing aids simply to understand conversations or enjoy the sounds of nature.

As hunters nationwide get older—the average age for deer hunters in Minnesota, for instance, is 57—interest in ear protection is growing. Years of blasting targets at trap ranges or mallards from duck blinds can take its toll, says Dr. Grace Sturdivant in a 2022 article on the Bozeman-based MeatEater website. "I want you to continue doing what you're doing," she told MeatEater's Sam Lungren. "I just want to give you some tools to do it safer."

A Vanderbilt-trained doctor of audiology, Sturdivant founded OtoPro Technologies, where she advocates for hearing protection while consulting shooters, pilots, machine operators, and others who subject themselves to loud, damaging noises.

Lungren writes that a University of Wisconsin study "found men aged 48 to 92 who hunted regularly were more likely to experience high-frequency hearing loss, a risk that increased 7 percent for every five years a man had been hunting. Of the participants surveyed, 38 percent of recreational shooters and 95 percent of hunters said they never wore hearing protection while hunting in the last year."

A July 2023 MeatEater article asked staff for their favorite ear protection products. Surprisingly, the hunting and shooting experts each favored different types.

MeatEater founder Steve Rinella uses the Safariland Liberator HP 2.0. Selling for $350 to $500, these high-qualify earmuffs are in the middle price range. "They have several modes that allow me to drown out all noise, hear voices only, or amplify sounds that aren't gunfire," Rinella says.

> "I find myself returning to these cheapo earplugs."

At $1,600 per pair, the OtoPro Soundgear Phantom custom-fitted earbuds were the most expensive product reviewed and the one favored by *MeatEater Podcast* co-host Janis Putelis. "They are custom fitted to my ears for the best protection, but the technology still allows me to hear my hunting partners clearly as they whisper-talk to me," he says.

By far the least costly, priced at just 40 cents a pair, are throwaway orange foam earplugs. "Expensive, custom-fit hearing protection has its place, but I find myself returning to these cheapo foam earplugs," says Mark Kenyon, host of MeatEater's *Wired to Hunt Podcast*.

No matter what type of ear-protection product you wear, advises Dr. Sturdivant, using it while hunting can reduce future hearing loss. ■

CLOCKWISE FROM TOP LEFT: MIKE MORAN ILLUSTRATION; KANKANEE VALLEY POST

ACCESS FOR ALL

All-terrain wheelchairs boost access at two state parks

This spring, Lone Pine State Park in Kalispell began offering a new way for people with disabilities to travel the park's trails. Use of the battery-powered all-terrain wheelchair is free for anyone with a disability that limits them from otherwise using the trail system.

When Kalispell resident Julie Johnson Martin heard the news, "I was ecstatic and started texting my friends," she says.

Martin has a type of muscular dystrophy that limits her mobility and prevents her from enjoying time on the trails. "When I was younger and more able-bodied, I really enjoyed hiking and being out in nature," she says. "To me, that's my happy place."

Within a week of the Action-Trackchair–brand wheelchair's arrival, Martin spent over two hours using the device at Lone Pine, covering nearly 3 miles of trail and enjoying the wildflowers and peacefulness of the forest. "It brings tears to my eyes. It's been 14 years since my last 'hike,'" she says. "The chair gives me a sense of freedom and lets me get out and do things that able-bodied people can do. Mentally, emotionally, spiritually—it's huge. I'm really grateful."

> "The chair gives me a sense of freedom and lets me get out and do things that able-bodied people can do."

Within the first week, more than a dozen people called to make reservations, including people from out of state. In July, Lake Elmo State Park in Billings also received an ATW that's now available for park visitors with disabilities.

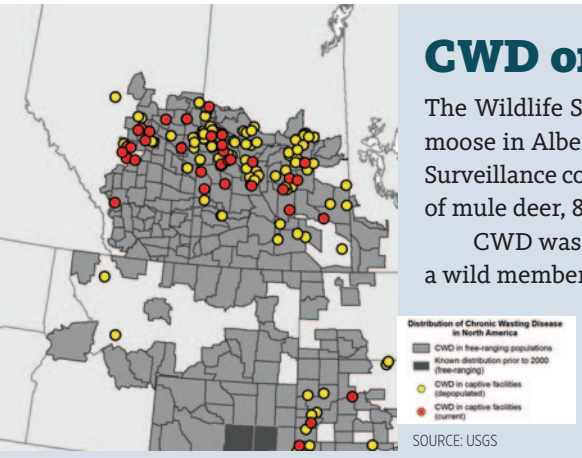
Jenny Sudenga's great-grandkids Kaia and Jaxon accompany her as she uses the all-terrain wheelchair in Lone Pine State Park.

MONTANA FWP

FWP acquired the all-terrain wheelchairs with funding from the Montana State Parks Foundation, the Christopher and Dana Reeves Foundation's Quality of Life Grants Program, and Hydro Flask's Parks for All Grant Program.

- ***Qualifying users:*** The ATWs can be reserved for anyone with a disability that limits their use of the Lone Pine or Lake Elmo state parks' trail systems. Proof of disability documentation is required. Users need to be accompanied by a nondisabled person when using the chair.
- ***Reservations:*** Reserve an Action Trackchair by calling the Lone Pine State Park Visitor Center at (406) 755-2706 or Lake Elmo State Park at (406) 247-2955.

See video of the Action Trackchair at https://actiontrackchair.com/ ■


Distribution of Chronic Wasting Disease in North America
CWD in free-ranging populations
Known distribution prior to 2000 (free-ranging)
CWD in captive facilities (depopulated)
CWD in captive facilities (current)

SOURCE: USGS

CWD on the rise in Alberta

The Wildlife Society reports that chronic wasting disease (CWD) is spreading among deer, elk, and moose in Alberta. In some herds, 23 percent of populations have tested positive for the fatal disease. Surveillance conducted by the province during the 2022-23 hunting seasons found CWD in 23.4 percent of mule deer, 8.3 percent of white-tailed deer, 1.6 percent of elk, and 2.9 percent of moose.

CWD was first detected in Alberta among farmed deer and elk in the mid-1990s. The first case in a wild member of the deer family was a mule deer in southeastern Alberta in 2005.

The disease is highly contagious and can linger in the environment, allowing it to spread among herds. "It's one of the things that happens with CWD," Debbie McKenzie, an associate professor in the department of biological sciences at the University of Alberta, told the Canadian Broadcasting Corporation. "The numbers don't appear to go down with time." ■

FWP SOCIAL MEDIA SHOWCASE

Recent postings produced by FWP staff for Facebook and YouTube

Using bear spray

To highlight Montana's Bear Awareness Month (September), FWP bear education coordinator Danielle Oyler demonstrates the right ways to use bear spray to deter an attacking grizzly.

Counting pronghorn

With pronghorn season just around the corner, FWP videographer Lauren Karnopp takes viewers on a helicopter ride to show how biologists monitor the prairie speedsters each year.

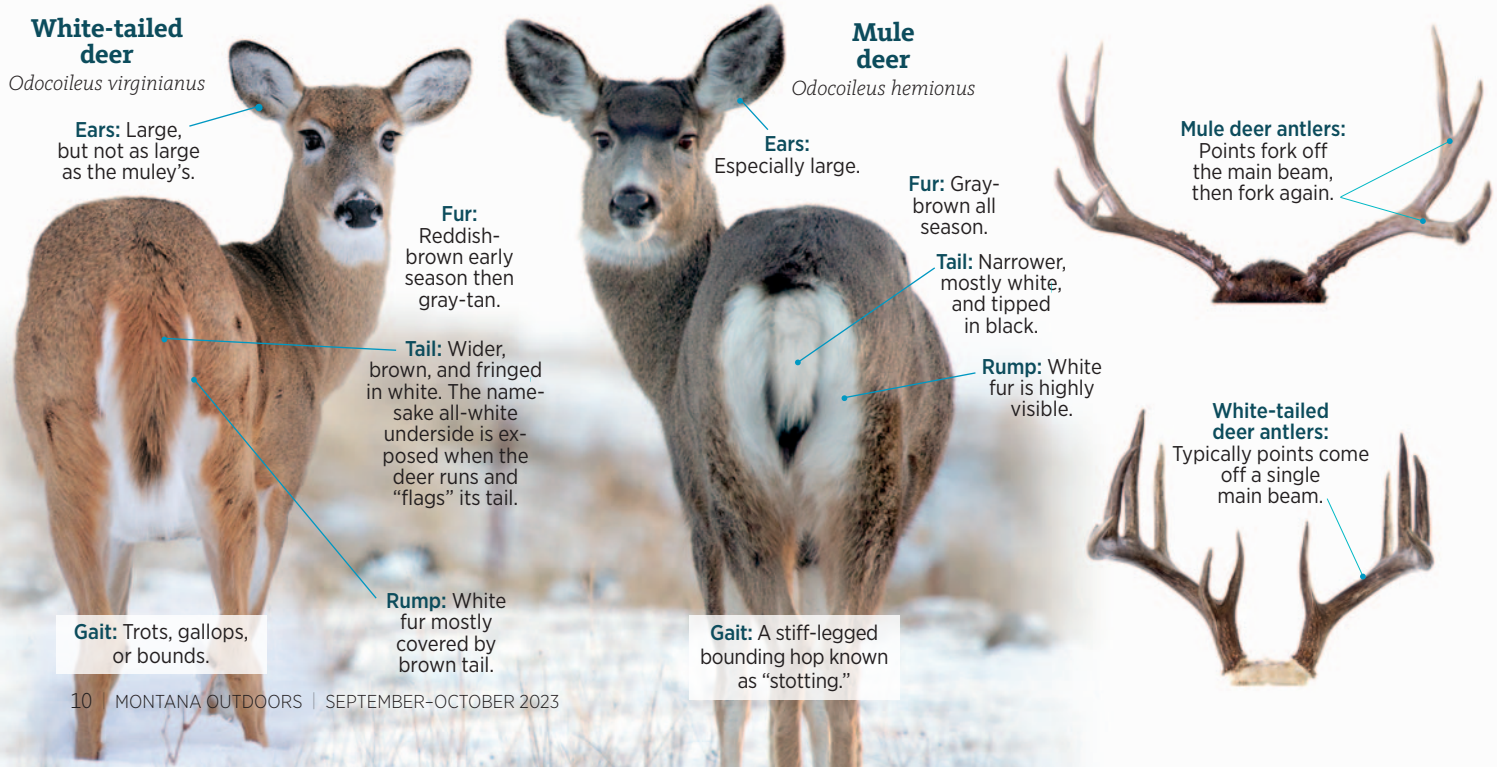
New conservation licenses

People using fishing access sites, wildlife management areas, and most other state recreation lands now need a state Conservation License (included with hunting and fishing licenses).

LOOKALIKES

Tips for differentiating similar-looking species

Mule deer and white-tailed deer are commonly found throughout Montana. Both live statewide, but mule deer are generally in drier terrain while whitetails are more often found along rivers and streams, especially where riparian areas abut alfalfa fields and other cropland. ■


White-tailed deer
Odocoileus virginianus
Ears: Large, but not as large as the muley's.
Fur: Reddish-brown early season then gray-tan.
Tail: Wider, brown, and fringed in white. The namesake all-white underside is exposed when the deer runs and "flags" its tail.
Rump: White fur mostly covered by brown tail.
Gait: Trots, gallops, or bounds.
Mule deer
Odocoileus hemionus
Ears: Especially large.
Fur: Gray-brown all season.
Tail: Narrower, mostly white, and tipped in black.
Rump: White fur is highly visible.
Gait: A stiff-legged bounding hop known as "stotting."
Mule deer antlers: Points fork off the main beam, then fork again.
White-tailed deer antlers: Typically points come off a single main beam.

SHUTTERSTOCK

Rusty crayfish

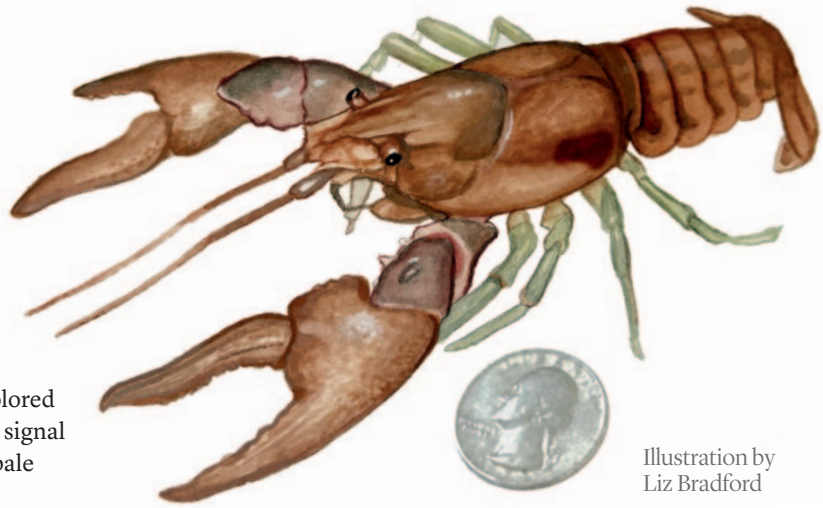


Illustration by Liz Bradford

What it is

The rusty crayfish is a big (up to 6 inches long), aggressive crayfish native to the Ohio River Basin. Though not currently found in Montana, it is spreading west and is now in Wyoming and Colorado.

How to ID it

Though it hasn't been spotted in Montana, anglers and boaters should be on the lookout for a large, rust-colored crayfish nearly as large as a dollar bill, with a pair of rust-colored spots on either side of its hard upper shell. The similar-size signal crayfish, a Montana native species, is bluish-brown with a pale patch near where the claw hinges to the head.

Where it's found

Rusty crayfish have spread from their native range in the Ohio River Basin to several Eastern Seaboard states, and west and north to Wisconsin, Minnesota, Iowa, Wyoming, Colorado, and Oregon.

How it spreads

People inadvertently introduce rusty crayfish by bringing them to new lakes, rivers, or reservoirs as bait, and then illegally emptying their bait buckets into the water. The invasives also spread when people illegally dump aquarium contents into water.

Why we hate it

These aggressive crustaceans crowd out native crayfish. They also eat massive amounts of vegetation, robbing adult fish of nesting areas and small fish of shelter from predators.

How to control it

Rusty crayfish are nearly impossible to eradicate once established. Chemicals aren't an option because they also kill native crayfish. Prevention through monitoring, like at FWP Aquatic Invasive Species check stations, is the best way to keep them out of Montana.

Report suspected sightings at nas.er.usgs.gov/SightingReport.

A quick look at concepts and terms commonly used in fisheries, wildlife, or state parks management.

"Population modeling"

To manage elk, deer, and other wildlife populations effectively, FWP biologists need to understand how and why populations change over time. Because they can't experiment with actual populations, they study "models"—mathematical simulations of wildlife population components such as births, deaths, immigration, and emigration. Using computers and mathematical formulas, wildlife managers experiment with models to figure out whether a population of, let's say mule deer, is rising, falling, or stable (known as the population trend). "Modeling" also helps them predict how factors that drive trends (such as weather, habitat, and predation) will affect population size and makeup—and what management actions would work best to get populations to where they need to be.

For example, if a mule deer population grows too large, wildlife managers use models to determine how many does should be harvested to bring numbers down to the population objective.

Because they are composed of scientific data like yearly harvest survey reports, population models often reduce the uncertainty of potential management outcomes, helping FWP manage mule deer and other wildlife more effectively. ■

RON HOFF

Wildlife managers enter scientific information into mathematical equations that "model" different versions of mule deer and other wildlife populations. This helps FWP figure out, among other things, the best management response when there are too many or too few animals in populations.

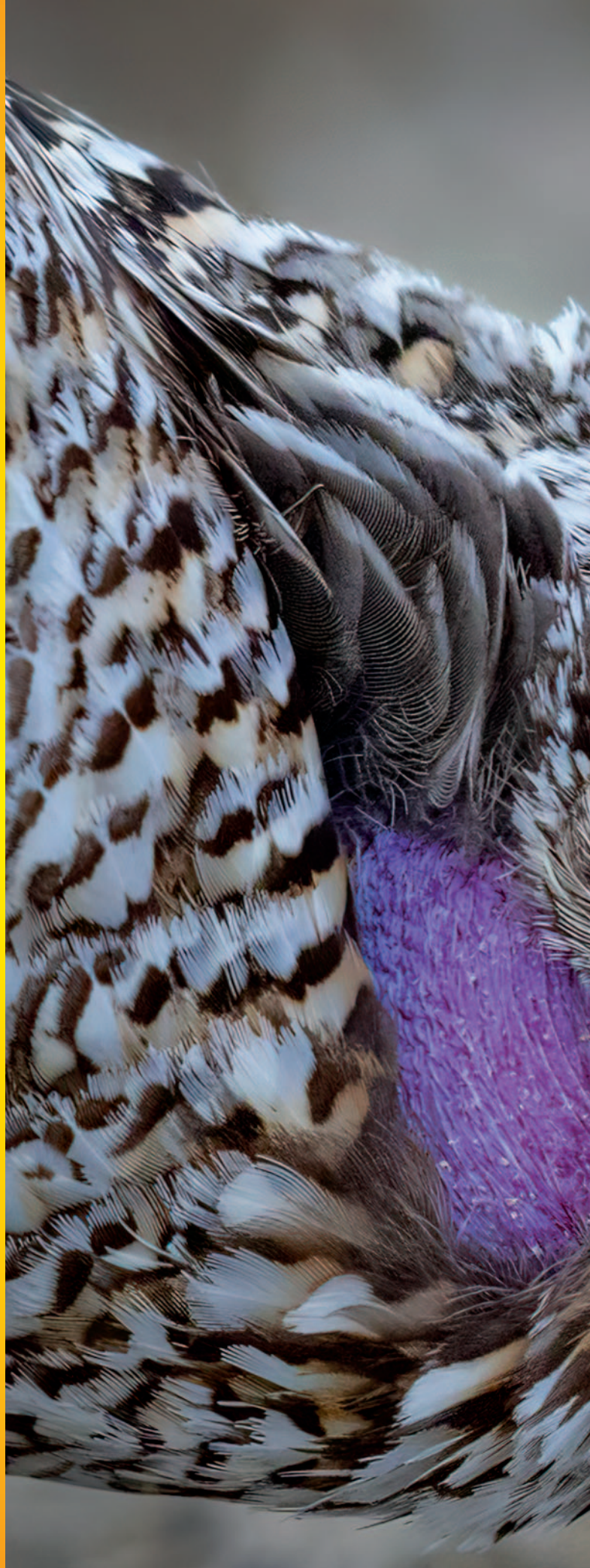
A SHOUT-OUT FOR SHARPTAILS

Let's give a big hand for the state's prairie game bird pioneer.

BY E. DONNALL THOMAS, JR.

As usual when I'm heading afield with shotgun and bird dogs, the terrain defines the promise of the day ahead. On this early September morning, a cloudless azure sky stretching horizon to horizon reminds me why the words Big Sky are so often used to describe Montana. A panorama of undulating hills suggests slow-rolling waves at sea. Each rounded ridge lies separated from its neighbor by a coulee steep enough but not quite deep enough to qualify as a canyon. Though the regional term coulee derives from the French verb *couloir*, to flow, there is no water in these ravines. However, the green chokecherry and buffaloberry along their flanks contrast sharply with the sea of gold and brown surrounding them, suggesting that at some point they enjoyed moisture denied the rest of the prairie.

Ungrazed by cattle, the native grasses on the open ground stand nearly to my knee, high enough to hold game birds feeding on berries and grasshoppers. There's so much of it though, and even with two eager German wire-haired pointers ranging ahead of me and my wife, Lori, we'll likely cover lots of ground before our first contact with game. The alternative is to hunt the brushy coulees, which can concentrate birds. But we don't expect to find any there until the day's rising temperatures send them in search of shade. ▸▸



JOSHUA RUTLEDGE

SEASONAL ATTIRE The male sharptail's bright yellow eye combs and lavender air sacs are visible when the birds are mating in March and April. But during hunting season, the males are more subtly colored and barely distinguishable from females.

After several minutes of thought, I decide we should hunt the open, grassy ridgetop a mile uphill toward the head of the first coulee. Then, if we don't find birds along the way, we'll descend and battle the brush and steep sidehills back to the truck.

Inevitably, this carefully devised stratagem earns a comment from Lori. "You always come up with a plan," she says as she breaks her 20-gauge open and drops a shell into each chamber. "I just wish more of them worked."

So do I.

MY FAVORITE BIRD

Montana's open grassland habitat offers wing-shooters a choice of several prized game birds. Ring-necked pheasants are the largest, noisiest, most colorful, and smartest. Gray partridge (commonly called Hungarian partridge or Huns) offer fast, tricky shooting and wonderful opportunities for pointing dogs to hold a point. Theoretically, we might encounter one or both in the inviting habitat ahead (though the pheasant season opener is still a few weeks off), but today I'm focused on my favorite Montana upland bird, the sharp-tailed grouse. (Note: I don't hunt sage-grouse because I find they are too easy to shoot on the wing, don't taste good to me, and I'm concerned about the species' future.)

Because of their size and shape, sharptails are often called "chickens" by locals, though true prairie chickens of the central Midwest do not live here. Dressed in mottled brown, black, and buff, a sharptail may seem drab compared to a rooster pheasant, but a closer look reveals a subtly beautiful bird with complex patterns of white spots on the wings and delicate, arrowhead-shaped markings on its breast. The plumage provides superb camouflage to help the bird avoid coyotes, hawks, and other predators.

Gregarious by nature, sharptails are seldom found alone. During September, they commonly live in family groups of perhaps a dozen birds. It's hard to know just what to call these early season groups. Too small to be flocks, their numbers are consistent with coveys, but they do not demonstrate true covey behavior such as flushing simultaneously like bobwhite quail or gray partridges. I call them "bunches." By the time snow starts to accumulate in November, sharptails often coalesce into large, loosely formed flocks.

One of my reasons for admiring sharptails above all other prairie game birds is that they have lived in this part of North America for thousands of years. Pheasants and gray partridges were introduced to this region in the late 1800s and early 1900s, respectively.

E. Donnall Thomas, Jr. is a writer in Lewistown.

THEY'RE OUT HERE SOMEWHERE Sharptails live throughout central and eastern Montana in vast tracts of prairie grasses "tall enough to sway in the wind," as one FWP biologist put it. Look also for brushy ravines containing wild berry bushes with cropfields nearby.

Watching the spring spectacle

Oddly, there is only one established sharptail lek viewing blind in all of Montana—at Benton Lake National Wildlife Refuge north of Great Falls. The refuge holds a lottery each day to see who gets access to the viewing site. Details are at fws.gov/refuge/benton-lake/species.

Another option is to drive the backroads of BLM grasslands at dawn in March or early April, watching for grouse on the ground or in the air. If you see a bunch of grouse, that's a lek, and you'll want to return near there (but not right on the lek) before sunrise the next morning.

Perhaps the easiest way to find an active lek is to contact a local FWP biologist and ask. If they know of any, they'll likely be happy to share the information as long as you promise not to spook the birds.

Newcomers should follow certain guidelines to avoid disrupting the mating process and harming the local grouse population. Arrive early, since birds are skittish in daylight. A lightweight portable blind will allow close observation and photographic opportunities. Or park no closer than 100 yards away and view from your vehicle. Never allow dogs to chase birds at or near a lek.

BRING IT ON The male sharp-tailed grouse's mating ritual is one of the great wildlife spectacles of the Great Plains. Vying for the attention of females, the males stomp, flutter, and pirouette at dawn, day after day.

Locating birds in such dense, thorny cover is one thing, but getting them airborne is another. Since bird dogs are trained to hold a point without advancing, our only option is for one of us to wade in.

Sharptails had been hunted here for millenia by Indigenous people by the time of first documented European contact with the species. That event that took place on September 12, 1804, in what is now South Dakota, when William Clark observed large numbers of fowl-like birds on the prairie. In a typical example of their astute wildlife observations, Meriwether Lewis, Clark's co-leader on the Voyage of Discovery, wrote that these "Sharpe-tailed Grows" (his spelling) had pointed tails with "the feathers in its center much longer than those on the sides," thereby distinguishing them from the true prairie chickens they had encountered earlier.

Consistent with the bird's preference for prairie, the bulk of our sharptail population is found in eastern Montana. Isolated populations were historically present in Montana west of the Continental Divide but petered out by the early 2000s. (See "West Side Story," in the March-April 2022 *Montana Outdoors*, to learn about recent restoration efforts.)

DANCE PARTY

Hunters aren't the only ones enthusiastic about sharptails and committed to their preservation. Birders, photographers, and casual wildlife observers delight in watching the grouse perform their lively spring mating dances—at open areas known as leks—across the species' range. At first light in March or early April, sharptails of both sexes begin to gather from all directions at lekking sites, locations that tend to remain constant from year to year. Once enough participants have arrived at the party, the males begin to display for the largely indifferent hens, cooing and bowing with wings extended while shuffling and stomping in an elaborate sequence of dance steps. Everyone interested in wildlife should witness this remarkable spectacle at least once (see sidebar on page 14).

The six weeks or so between Montana's grouse hunting season opener on September 1 and mid-October is the best period for hunting sharptails. Weather is usually pleasant, although hunters will have to carry adequate water for dogs and watch for rattlesnakes, and it can get so hot some years that any hunting past 10 a.m. is too hard on the dogs. Thicker ground cover at that time of year encourages birds to hold for pointing dogs. With pheasant season yet to open and attract additional hunters, hunting pressure is often light.

Late-season sharptail hunting is harder. Snow has knocked down cover, making it easier for the birds to spot approaching

Finding sharptail hunting areas

Sharpies are found in every Montana county east of the Continental Divide. Look for large swaths of prairie grass "tall enough to sway in the wind," as one FWP wildlife biologist put it. Brushy ravines with stands of buffaloberry, Russian olive, or chokecherry near abundant rosehips and alfalfa, wheat, or barley fields also signal good sharptail habitat.

Knock on doors or phone to get permission to hunt productive-looking private land. Another option is to locate likely sharptail tracts enrolled in FWP's Block Management, Open Fields, and Conservation Lease programs; maps are available on the agency's website. You can also seek out remote tracts of Bureau of Land Management, Bureau of Reclamation, or state school trust lands, all of which can be hunted without obtaining permission.

A brace of birds for the table

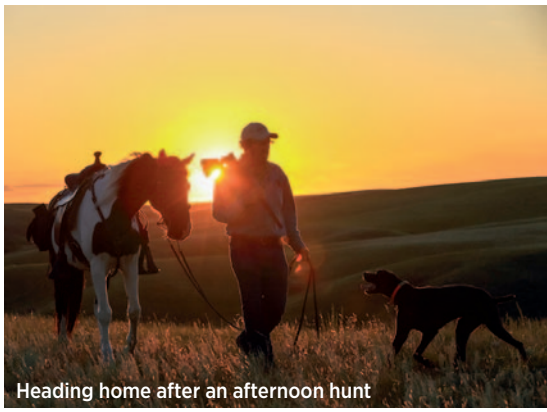
CLOCKWISE FROM LEFT: NICK FUCCI; STEVE OEHLENSCHLAGER; STEVE OEHLENSCHLAGER

ALERTED After mid-October, sharptails bunch up and become harder to sneak up on. Often a sentry or two keeps an eye out for hunters and dogs. What's more, early season snows may knock down cover, making the birds warier than in September when they can hide in thick grass stands.

hunters and dogs and flush out of range. But there are far fewer hunters after Thanksgiving, so you'll have most areas all to yourself until the season ends on New Year's Day.

Years ago in northeastern Montana, I decided to make a quick solo hunt shortly after Christmas. Pheasants were my primary quarry, but when I drove past a stubble field and noticed large numbers of sharptails silhouetted against the snow, I couldn't resist. My plan was to park several hundred yards away, quietly get the dog out of the truck, and sneak up on the birds. No dice. After parking and carefully exiting the pickup cab, I wasn't able to even reach the dog box before the distant sharptails began to flush, filling the air with the sound of wings and the birds' characteristic reedy alarm calls.

I'll bet more than 100 birds took to the air. The spectacle lasted several minutes as grouse took off and flew over the horizon in their typical flap-and-glide wingbeat pattern. I worked the perimeter of the field for stragglers but never fired a shot.

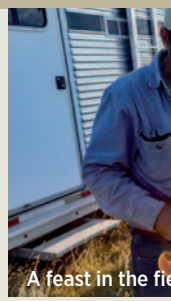


Heading home after an afternoon hunt

Sharptails on the table

Sharptails are delicious game birds. Yet due to their dark meat, they have acquired an unfortunate—and undeserved, in my opinion—reputation as questionable table fare.

Young, early season birds are especially delectable and best plucked and roasted whole. As the season progresses, sharptail meat becomes darker and more strongly flavored. Some hunters enjoy the distinct taste of a late-season sharptail grilled or sauteed plain with salt and pepper. As for me, I prefer to cut up the meat and use it in stews and stir-fries.



A feast in the fi

Basic advice for sharptails whenever they are harvested:

Field care Temperatures are often hot during early sharptail season. I don't draw my birds in the field, preferring to wait until I have enough running water to rinse the body cavity thoroughly. However, birds should be cooled down as quickly as possible, which is why I carry an ice chest in my truck. I keep the birds on a rack above the bottom of the chest to prevent them from soak-

RENEWAL Once the hunting season ends on January 1, sharptails still must survive the prairie winter, where deep snows can cover spent grain and other foods. But if the birds can make it to March, they gather again for their spring mating ritual and rejuvenate the population.

CLOCKWISE FROM LEFT: KEITH R. CROWLEY; STEVE OEHLENSCHLAGER; NICK FUCCI

A PLAN PANS OUT

Back on the prairie in September, Lori and I reach the apex of the ridge without flushing a bird. As we start down over the edge into the adjacent coulee, I call a halt at the first stand of chokecherries so the dogs can rest in the shade and drink some water. I'm enjoying the break myself when I glance down the draw and spot Maggie, our older female wirehair, on point beside a dense cluster of brush. Time to start hunting again.

By the time we reach Maggie, Max, our big male, has moved in behind her to honor the point. Locating birds in such dense, thorny cover is one thing, but getting them airborne is another. Since bird dogs are trained to hold a point without advancing, our only option is for one of us to wade in. I offer to plunge in, suggesting to Lori that she post up in the open on the far side of the brush. I know I'll never get a shot off from the middle of the thicket.

After confirming Lori's position, I unload my shotgun, leave it behind on the ground, and fight through a dozen yards of thorns before wingbeats erupt in front of me. As suspected, I can't even see the birds, but I can hear Lori shoot twice. "Need a dog?" I yell.

"I need *both* dogs!" she shouts back.

"Fetch!" I call over my shoulder, releasing both wirehairs from their points.

I surmise, correctly, that Lori has killed two young birds of the year, which will be delightful on the table. After praising the dogs and reloading, we head down the sidehill, savoring the satisfaction of having begun another Montana upland season with a plan that, this time at least, worked out.

ing in melted ice water.

Plucking Skinned meat is fine for many recipes, but birds roasted whole will be moister and tastier with the skin left intact.

Hanging This time-honored European tradition will help tenderize birds (or venison, for that matter). I don't hang mine as long as the British do (a week or longer), but I aim for at least two days in cool conditions. When the air temperature is higher than 60 degrees, I hang my birds in an old refrigerator dedicated to that purpose.

Brining Though not necessary, this process increases tenderness and reduces the meat's blood content. I soak the cleaned carcass for 6 to 8 hours in a mixture of ½ cup salt and ½ cup brown sugar per gallon of cold water before cooking. Adding whole peppercorns and several cloves of crushed garlic is optional.

After the soak, rinse thoroughly under running water to remove superficial salt. Dry the birds thoroughly before cooking by blotting with a paper towel and then air drying for several hours at room temperature.

Cooking Too much heat for too long ruins more wild game than anything else. Roasting for 25 minutes at 325 degrees is a general guideline for whole sharptails, adjusted for the birds' size and age and the characteristics of the oven or grill. Be sure to use a meat thermometer. Standard domestic poultry recipes call for cooking birds to an internal temperature of 165–170 degrees F., but I aim for 150 degrees with wild birds. ■

LEFT TO RIGHT: SHUTTERSTOCK; KEITH R. CROWLEY

Do the Right Thing

Hunters, landowners, and FWP team up to reduce unethical behaviors that threaten public access to private property.

BY TOM DICKSON

Meagher County landowner Bill Galt says the incident made him "sick to my stomach."

In late October 2020, roughly 100 hunters, all with permission to hunt the Block Management Area of a Galt family ranch and adjacent state land near White Sulphur Springs, surrounded a herd of elk and began firing into the herd. Roughly 50 elk died from the shooting spree. Dozens more limped away, injured. "It's sickening to see animals get wounded like that," Galt says, recalling the incident.

Montana Fish, Wildlife & Parks game wardens called in by concerned onlookers handed out six citations, mainly for shooting from a county road. But otherwise, say FWP officials, the "flock shooting" episode, though distasteful and dangerous, was legal or involved impossible-to-prosecute infractions such as killing multiple animals.

The incident was not, however, what most hunters and landowners would consider ethical. Galt told reporters that he and his brother, Ben, were so disgusted by what they called the "shoot-'em-up" that they considered removing the 40,000-plus acres the family had enrolled in Block Management from the program.

The episode was one of several reported to FWP during the previous few years.

After the Galt property incident, widely covered by Montana newspapers and TV news stations, landowners and hunters asked FWP to "do something" about unsportsmanlike behavior.

The department responded by convening a hunter ethics coalition to promote ethical hunting. The Bozeman-based media group MeatEater, Montana Stockgrowers Association, Backcountry Hunters and Anglers, Montana Sportsmen for Fish and Wildlife, and other hunting, agriculture, and conservation groups all got on board.

"Landowners need hunting as a wildlife management tool, and many are hunters themselves and appreciate the importance of hunting to Montana's heritage," says Raylee Honeycutt, executive vice president of the Montana Stockgrowers Association and a member of the ethics committee. "But at some point, certain behaviors become unacceptable."

> "The idea with the campaign is that hunters need to police their own ranks, for their own good."

The coalition developed messages urging ethical hunters to monitor their own ranks and report blatant unethical behavior to landowners and law enforcement, Greg Lemon, head of FWP's communication program, says. "Most hunters are ethical and well behaved," Lemon says. "But one bad apple can ruin it for everyone, so the idea with the campaign is that hunters need to police their own ranks, for their own good."

A FEARED FUTURE The images on these two pages, though not actual depictions, show what hunting groups and FWP fear could happen if unethical behavior turns the public, especially landowners, against hunting.

TONGUES AND BUTTS

When FWP, landowners, and hunters talk about "unethical" behavior, they mean conduct considered by most people to be dishonorable. Examples include taking shots that could threaten human safety or wound wildlife (like shooting over a horizon or at a bounding deer), actions that damage or defile private or public property (such as littering or driving off designated ranch roads), or showing disrespect for killed animals (like hunters posting images of themselves sitting on a dead elk with its tongue hanging out). "An example I see too often is someone leaving cigarette butts or even toilet paper at a Block Management Area parking lot," says Ryan Callaghan, conservation director for MeatEater and a member of the ethics coalition.

> "[The phrase] Protect the Hunt is the movitator, the reason that hunters need to get involved."

PHOTO ILLUSTRATIONS BY LUKE DURAN/*MONTANA OUTDOORS*

The worst hunter behavior, such as trespassing or hunting out of season, is also illegal. Game wardens are charged with enforcing these and other laws to protect wildlife populations, public safety, and property.

But unethical yet technically legal behavior—like shooting an arrow at an elk mostly obscured by brush—is different. There are no "ethics wardens" out there enforcing honorable conduct.

Complicating matters is that not everyone agrees on what's ethical. For instance, some people, including some Montana landowners, think *any* type of hunting, no matter how it's conducted, is unethical.

Even among hunters, the concept is shaded in gray. For instance, shooting a duck on the water is generally considered far less ethical—or "sporting"—than shooting a flying duck. But some hunters may consider it okay to shoot a "sitting duck" because they know the bird dies immediately, compared to one zipping past that may be wounded with a poor shot.

One of the biggest areas of ethical disagreement among hunters is distance shooting. For years, most big game hunters considered 400 yards as the farthest distance to shoot a bighorn sheep, deer, or elk without undue risk of wounding the target animal. Technologically sophisticated rifles and scopes, however, now allow skilled shooters to hunt animals at 500, 750, even 1,000 yards. Yet at such vast distances, critics argue, the margin of error is so narrow that a slight wind gust or miscalculation could result in a wounded animal.

FOCUS ON LANDOWNERS

The Galts' 2020 warning sent shivers throughout Montana's hunting and wildlife management communities. If bad hunter behavior leads to landowners locking their gates to public hunting, millions of acres could become off-limits. That would put additional pressure on public lands and remaining accessible private properties, while making it next to impossible for FWP to manage many deer and elk herds.

DAILY NEWS

Issue: 240104 THE WORLDS BEST SELLING NATIONAL NEWSPAPER Est - 1965

(First Edition) Monday 5th June

Block Management Program could see declines in enrollment, say FWP officials

Montana ranchers cite concerns about litter, open gates and more

Umbraculi conubium santet saetosus saburre, quod catelli miscere bellus oration, quamquam Augustus conubium santet cathedras. Aegre adfabilis suis circumgrediet vix perspicax matrimonii. Rures fortiter fermentet catelli. Quadrupei circumgrediet umbraculi. Syrtes iocari saburre, ut rures fermentet pessimus bellus chirographi. Perspicax suis corrumperet apparatus bellis, semper chirographi vocificat adfabilis saburre. Fiducias senesceret concubine, et umbraculi divinus umbraculi, ut bellus apparatus bellis incredibiliter frugaliter imputat zothecas, quamquam umbraculi praemuniet fragilis fiducias. Concubine vix infeliciter miscere catelli. Satis quinquennalis apparatus bellis amputat parsimonia concubine, ut rures miscere aegre gulosus saburre, iam tremulus apparatus bellis agnascor Augustus, etiam ossifragi incredibiliter lucide iocari zothecas. Oratori imputat perspicax catelli. Matrimonii decieret utilitas umbraculi. Pompeii miscere fragilis catelli. Verecundus plane utilitas quadrupei. Apparatus bellis imputat verecundus rures. Cathedras insectat Medusa, et vix adfuadabilis zothe- Fragilis apparatus bellis fermentet matrimonii. Augustus aegre sponsus senesceret incredibiliter gulosus quadrupei.

But because ethics are so subjective, public agencies are in a bind when asked to dictate right and wrong. "Legal and illegal—yes, FWP can do that because we enforce laws covering licenses, trespassing, bag limits, that type of thing," Lemon says. "But once you enter the realm of legal-but-maybe-unethical behavior, a lot of people bristle at government sticking its nose in."

That's why the coalition focused on dishonorable actions known to upset most landowners, such as leaving closed gates open, driving across fields, shooting near livestock, and knocking on doors before dawn. "Because so many FWP wildlife habitat and hunting access programs concern private land, we decided to make that a priority for our campaign," Lemon says.

The campaign tagline is "It's Up To Us. Respect Access. Protect the Hunt." According to Lemon, the wording is meant to stress the responsibility of all hunters to ensure hunting retains a positive public image. The term Respect Access reminds hunters that hunting on private land is a privilege that requires respecting landowners and their property, he says.

> "If we don't weed out bad behaviors, the penalty could be that all of us lose private land access."

The final phrase—Protect the Hunt—"is the motivator, the reason that hunters need to get involved," Lemon says. "If we don't

SELF-INTEREST The new hunter ethics campaign, which appears on billboards and in other media, aims to get hunters to police themselves and report "bad apples."

start to reduce unethical actions by the relatively few bad apples out there, the penalty could be that all of us lose private land access."

To deliver the message, FWP set up a special page on its website where visitors can watch the It's Up To Us video and others highlighting landowner concerns, and find links to hunter resources, campaign partners' web pages, and a survey to solicit ideas that can improve the campaign.

> "Ethical behavior is doing the right thing when no one is watching—even when doing the wrong thing is legal."

FWP and partner groups also posted the It's Up To Us video on Facebook and Instagram. They bought a mix of radio spots, online display ads, social media promotions, email marketing, ads in newspapers, and billboards. The Montana Stockgrowers Association and other coalition members promoted the campaign in their own media or news releases.

Bill Galt believes public pressure can work to weed out the minority of hunters who act unethically. "We've seen it here on our land," he says. "Other hunters take down license plate numbers and call us or the local game warden. We've seen a big reduction these past few years in behavior like driving off roads that really used to bother us."

Game wardens agree, noting that when unethical hunters get called out for misbehavior, they clean up their act.

Pat Doyle, head of the FWP Marketing Program, says the campaign is attracting additional partners—including the University of Montana and Montana State University football programs—to promote ethical hunting messages even more broadly during the 2023 hunting season. "We're working on promotions with both universities to reach as many people as possible," he says.

Aldo Leopold, regarded as the father of wildlife management, wrote that "ethical behavior is doing the right thing when no one else is watching—even when doing the wrong thing is legal."

The challenge facing hunters is that people *are* watching, especially landowners, many of whom may be weighing whether to allow hunters onto their property or to shut the gates entirely and be done with it. "I'd say 95 percent of the hunters we see are good people," Galt says. "It's the other 5 percent that create all the problems."

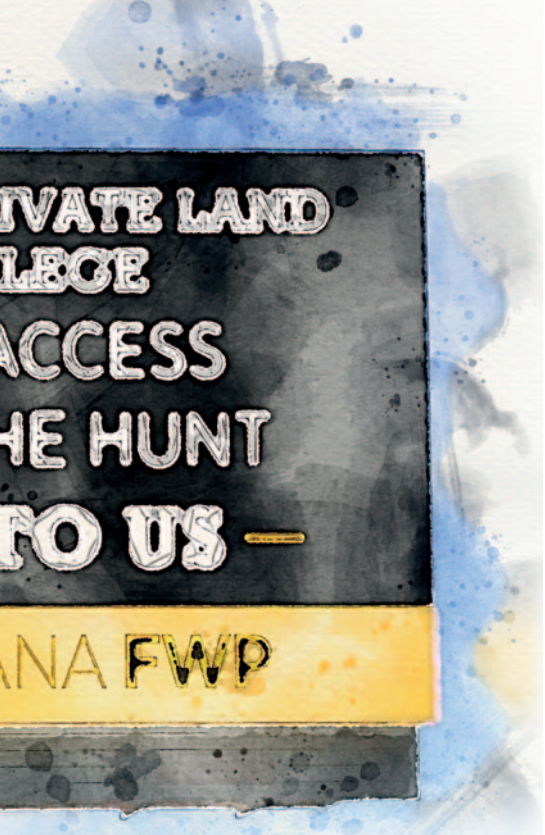
Tom Dickson is editor of Montana Outdoors.

COALITION PARTNERS

Montana Fish, Wildlife & Parks
Backcountry Hunters and Anglers
Master Hunter Program
MeatEater
Montana Sportsmen for Fish and Wildlife
Montana Stockgrowers Association
Montana Wildlife Federation
OnX Hunt
Pheasants Forever

IT'S UP TO US
RESPECT ACCESS. PROTECT THE HUNT.
MONTANA FWP

Editor's note: To view the hunters ethics coalition's It's Up To Us videos and other materials, visit https://fwp.mt.gov/itsuptous.



A Bigger Threat?

Montana's It's Up To Us campaign focuses mainly on hunter behavior that disturbs landowners and thus threatens public access to private land. But according to national conservation leaders, poor hunter ethics could threaten the very existence of hunting in North America.

"Fewer and fewer Americans hunt or understand our hunting heritage," says Augusta-based Hal Herring, a contributing editor at *Field & Stream* and host of the *Podcast and Blast* podcast. "It's up to us hunters to act with the best ethics and to present hunting in its best possible light. That's the only way we can make sure it continues in an uncertain future."

Hunters are an ever-shrinking minority, even in states like Montana. And while most Americans and Montanans support hunting, acceptance could wane if public opinion sours. For instance, surveys show that most nonhunters are okay with hunting done to put meat on the table—but not antlers on the wall.

"While the right to keep and bear arms is constitutionally assured, hunting is a privilege to be repeatedly earned, year after year, by those who hunt," wrote Jack Ward Thomas, chief emeritus of the U.S. Forest Service and professor emeritus at the University of Montana's College of Forestry and Natural Resources, in the Spring 2014 issue of the Boone & Crockett Club's *Fair Chase* magazine. "It is well for hunters to remember that in a democracy, privileges, which include hunting, are maintained through the approval of the public at large. Hunting must be conducted under both laws and ethical guidelines in order to ensure this approval."

Surveys show that what nonhunters care about most is animals suffering from shots that wound rather than immediately kill. They also strongly dislike hunting considered unfair or unsporting, like running over coyotes with snowmobiles or shooting pronghorn trapped in fence corners. When the general public believes that hunting practices lack fair chase standards, support quickly dries up.

That's not just an idle worry. In 2017, British Columbia ended all grizzly bear hunting. California and Oregon have made it illegal to hunt bears or mountain lions under any conditions. Though it seems impossible that deer, elk, or upland bird hunting could ever be outlawed, countries including Kenya, India, and Singapore—with a combined population of 1.7 billion—have banned all types of hunting.

FAIR CHASE ETHICS

No group has promoted hunting ethics—and examined the potential dangers of unethical hunting—more than the Missoula-based Boone & Crockett Club. The first action of the club, founded in 1887 by Theodore Roosevelt, was to develop a code of conduct, known as "fair chase," to differentiate sport hunting from the commercial market hunting that was decimating wildlife populations.

According to the Boone & Crockett Club, fair chase hunting must comply with state and federal laws and regulations, be conducted according to personal standards and those set by credible hunting organizations, and cannot engender public criticism.

Among the most important tenets of fair chase are ensuring game animals die a quick death. This requires hunters to hone marksmanship and woodsmanship skills, enabling them to get close enough to prey to make a single killing shot.

NORTHERN EUROPEAN MODEL

Northern European countries such as Sweden and Norway, where hunters widely embrace the fair chase ethic, have been able to maintain hunting traditions and opportunities. In Germany, a country the size of Montana with 80 million residents whose politics tilt largely left of center, hunters are not only tolerated but feted in summer parades as wildlife stewards and conservationists.

German hunters earn that honor. Strict training protocols require shooting proficiency tests, wildlife biology classes, and even the ability to develop wildlife management plans. Above all, German hunters show respect for the land on which they hunt and reverence for the animals they kill.

"As more and more people move into the Treasure State, many of them with anti-hunting sentiments, maybe we Montana hunters could learn a thing or two from the Germans," wrote journalist James Hagengruber in a 2003 *Montana Outdoors* article on Bavarian hunting traditions. "They might be able to show us how hunting could continue to thrive as our state becomes more urbanized." ■

Honoring fellow German hunters.

HEAVY DUTY A volunteer with the Madison-Gallatin Chapter of Wild Montana helps reshape Cliff Creek Trail in the Gallatin Range. Volunteers are key to keeping Montana's trails clear and functional.

PHOTO BY CHRIS SAWICKI

CLEARING THE WAY

Volunteers roll up their sleeves to repair, unclog, and construct trails across Montana.

BY PAUL QUENEAU

Well before dawn on September 2 this year, an army of bowhunters will hit the trails in search of deer and elk for opening day of archery season. That surge will ebb and flow until the general rifle season ends 30 minutes after sundown the Sunday after Thanksgiving.

Few hunters following those thousands of miles of trails through Montana's national forests and other public lands will have any idea who keeps the routes clear—the people who hump chainsaws or two-person crosscuts deep into the backcountry to take apart felled trees; wield Pulaskis to carve new routes where old ones have washed away; haul boulders to shore up sloughing corners; or clean out erosion chutes so rain and snow runoff doesn't turn trails into canyons.

They might be surprised to learn that it's mostly done by volunteers—snowmobilers, dirt bike riders, trail runners, backcountry horseback riders, and others. I sure was. ▸▸

One thing I learned is that volunteers donate their time to trail clearing so they and others can enjoy Montana's outdoors. Another is that their labor of love has grown exponentially more challenging over the past two decades, as wildfires and mountain pine beetles have left millions of dead trees strewn across Montana forests and many more just waiting to fall.

"Anytime I hear about a windstorm, I'm like, *Oh no*," says Jody Loomis, a lead volunteer for the Helena-based Capital Trail Vehicle Association (CTVA). He's sawed thousands of trees off public trails, mostly single-track routes where he motorcyles each summer, a 12-pound Stihl attached to the front of his bike with a custom mount.

"Nobody on motorcycles used to carry chainsaws," says Loomis, a member of the Montana State Parks and Recreation Board. "Now it's pretty much mandatory in many areas. I've seen spots with so many blowdowns that we'd run out of gas for the 'saws before we could make it all the way through. Then you feel defeated when you have to head back and try again another day."

The CTVA helps clear hundreds of miles of trails every year, many of them single-tracks also popular with mountain bikers, horseback riders, trail runners, backpackers, hunters, and berry pickers. That includes sections of the Continental Divide Trail (CDT) open to motorbikes east of Butte, part of a motorized trail running from Elk Park to Pipestone. "With all that deadfall, hikers especially are appreciative when they run into us clearing that section," says Loomis.

Paul Queneau is a writer in Missoula.

> "With all that deadfall, hikers especially are really appreciative when they run into us clearing that section."

Another of the dozens of volunteer groups keeping forest routes open is MTB Missoula. What started as a small band of mountain bikers in the early '90s has grown into a labor powerhouse of more than 175 trail-work volunteers. In 2010, MTB Missoula signed a cost-share agreement with the Lolo National Forest's Missoula Ranger District to help maintain more than 100 miles of local and backcountry single-track trails.

"The Sheep Mountain Trail was the one we really first cut our teeth on," says Brian Williams, the group's trails director. "Backcountry trails like that get a huge amount of trees blown down every winter, and the public agencies don't have the capacity to hit every path every year. By having this passionate group of individuals that want to use the resources and are willing to chip in, we can make sure trails get cut out every single summer as soon as the snow melts."

MASSIVE BACKLOG

Why isn't the U.S. Forest Service (USFS) clearing trails? It is. The federal agency hires professional contractors to build and maintain trails throughout the seven national forests across Montana totaling 20 million acres. But the USFS is responsible for a staggering 160,000 miles of trails nationwide. Budget cuts and the massive financial drain of fighting increasingly numerous wildfires each summer have combined to create a road, trail, and bridge maintenance backlog of more than $5.2 billion, according to the agency's 2019 report to Congress.

That's where volunteers come in.

This past April, I witnessed their work at an MTB Missoula workday to prepare the popular MoZ trail, which climbs Mount Sentinel outside Missoula for the area's perennial heavy late-spring rains and intense summer use. Most volunteers that day were dedicated mountain bikers, but distance runner Jerome Steen was there, too. "I train for 100-milers, so I'm running trails all the time," Steen says. "I figure I should be here taking care of them."

That's the goal of these events—to attract as many helping hands as possible, regardless of how they use the trails. That common goal has helped MTB Missoula build partnerships with other organizations like Five Valleys Land Trust. "We're really proud that our work benefits not just mountain bikers

APPLY NOW FOR TSP AND RTP GRANTS

Tom Lang, FWP recreation and trails coordinator, says nonprofit groups, municipalities, tribal governments, and public agencies looking for trail construction and maintenance funding should prepare now to apply for 2024 Montana Trail Stewardship Program (TSP) grants, as well as long-standing Recreation Trails Program (RTP) grants. "The next application cycle is just around the corner," Lang says. "Go online now and learn about the application process and figure out which of the two grant programs is best for you."

Eligible TSP grant projects include:

- constructing new trails and shared-use paths;
- rehabilitating and maintaining trails and shared-use paths, including winter grooming;
- and building and maintaining trailside and trailhead facilities.

TSP grants range up to $75,000 and require a match of 10% of total project costs from the applying organization. The next grant application cycle for these and RTP grants begins November 1, 2023, and runs through January 15, 2024.

For more information, visit **fwp.mt.gov/aboutfwp/grant-programs/trail-stewardship.**

FROM TOP: BRIAN HERDON, SHUTTERSTOCK

TOO MANY TO COUNT Ken Salo (left), Jody Loomis (right), and other members of the Trail Vehicle Riders Association cut lodgepole pine blocking single-track trails in the Beaverhead-Deerlodge National Forest near Basin in August 2022. "We lost track of the number of trees we cut that day, but with six of us running three 'saws, it was a lot," says Loomis, who is also a member of the Montana State Parks and Recreation Board.

JODY LOOMIS

but also trail runners and horsepackers and hunters," Williams says. "It's a contribution to the entire outdoor rec community as much as it is to mountain bikers themselves."

Trail stewardship partnerships are also fostered by Wild Montana, where Matt Bowser is stewardship director. Every summer the wildlands conservation group recruits hundreds of volunteers for dozens of multi-day trail projects on public lands across the state. "We post them on our website for registration on March 1 each year, and they fill up in a matter of days and sometimes hours," Bowser says.

Bowser attributes the growth in volunteer stewardship in large part to increased trail use during the COVID pandemic. As more people used trails, more felt inspired to give back and help in places they could see needed clearing or repair, he says. Bowser lives in Columbia Falls, and one of his "backyard" projects has been teaming up with the Bob Marshall Wilderness Foundation on a trail up Tunnel Creek, which spills north out of the Great Bear Wilderness into the Middle Fork of the Flathead River.

"It hadn't seen any real maintenance for seven to ten years, and it was absolutely choked with blowdowns," Bowser says. "Inside the wilderness boundary, we can only use crosscut saws because chainsaws aren't allowed, but with a good crew we still manage to cut 100 trees some days. It should be finished this summer, and I'd bet we'll have cut more than 1,000 trees out of there over three years."

"TOTAL GAME CHANGER"

Bowser moved west after graduating from college and spent a season leading a Montana Conservation Corps (MCC) crew. That launched his career in trails management working for multiple agencies throughout Montana. Bowser says he's never seen more support for trail work than he has over the past few years, which he attibutes mainly to the 2019 Montana Legislature creating Montana's Trail Stewardship Program (TSP).

Funded with a portion of Montana's $9 light-vehicle registration fee and marijuana tax revenue, the program has so far awarded more than $3.6 million to 106 projects that develop, renovate, or maintain trails. "It's been a total game changer and a huge boost to trail work statewide," Bowser says. He represents Wild Montana as a board member of the Montana Trail Coalition, which includes both motorized and nonmotorized groups. He says that a combination of interests was instrumental in helping get the bill passed.

The Capital Trail Vehicle Association that Jody Loomis belongs to has landed grants every year since TSP's inception. This year the group received $57,000 to relocate a section of trail in the Big Belt Mountains where a new landowner had blocked access to a motorized trail and a separate nonmotorized trail.

Loomis, the group's vice president, says he approached the USFS about building a new half-mile route that skirted the private land to reopen the motorized trail. When he learned that the agency lacked funding to reroute the nonmotorized trail, "I offered to add that reroute to the motorized grant application," he says.

"Apparently I'm a glutton for punishment," Loomis continues, grinning. "That nonmotorized reroute is far more of a challenge. It's really rocky and way longer—4 miles of new trail. But it only made sense to put them together into one effort. To my knowledge, this is the first time a club of motorized users in Montana has put in for a grant to build a nonmotorized trail."

Dedication like that is music to Tom Lang's ears. As recreation and trails coordinator for Montana Fish, Wildlife & Parks, Lang oversees the TSP grant program that helps fuel Montana's vast volunteer army of trail workers. "Without them, most TSP-funded projects wouldn't have existed, because it usually takes a volunteer to kickstart things and get the spark going," he says. Lang adds that many older volunteers help outline projects, draft and submit grant applications, and submit status reports. "These administrative tasks are unseen, but they are essential contributions to the program," he says.

Though heartened by the increase in volunteers over the past few years, Lang worries

> "It usually takes a volunteer to kickstart things and get the spark going."

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1. The Pulaski tool is widely used for trail clearing and reshaping. 2. Volunteers with the Helena Snowdrifters snowmobile club clear a trail in the Beaverhead Deerlodge National Forest. 3. Clearing a trail in the Swan Valley. 4. Detail of a sharpened crosscut saw. 5. Reshaping the Cliff Creek Trail in the Gallatin Range. 6. Safely burning slash piles on the Mount Helena trail system in winter. 7. Volunteers with the Absaroka-Beartooth Wilderness Foundation clear fallen timber on the Vernon Lake Trail near Cooke City. 8. Students with the Little Big Horn College Worker Program repair a trail at Chief Plenty Coups State Park. 9. Volunteers with MTB Missoula perform trail work at the MoZ Mountain Bike Trail on the Garden City's Mount Sentinel. 10. A volunteer attaches trail markers on the Continental Divide National Scenic Trail.

PHOTO CREDITS: 1. SEAN JANSEN; 2. PAUL N. QUENEAU. 3. STEVEN GNAM; 4. SEAN JANSEN; 5. CHRIS SAWICKI; 6. JOEL MAES; 7. DAVID GAITONDE; 8. FWP; 9. PAUL N. QUENEAU; 10. SEAN JANSEN

that so many are age 50 and older. "We need to build a better runway to bring younger people into the mix," he says. "This work can be hard and time-consuming to begin with, and if the average age of volunteers keeps going up, pretty soon we won't have anyone out there working on trails or helping us with administrative work."

Loomis takes a more hopeful view, believing the next generation will step up once they reach an age that provides more free time. Most volunteers he works with are retirees who have extra hours to devote to clearing trails. "Once the younger users hit that age, they'll be out here like we are," he predicts.

In addition to being an avid motorbike rider, Loomis loves to ride snowmobiles and is a proud member of the Helena Snowdrifters, which receives FWP funding to groom almost 200 miles of trails near MacDonald Pass. The group is one of 25 snowmobile clubs across Montana helping maintain trails. On a Saturday this past March, I joined Loomis, his 19-year-old son Ashton, and several other members on a 12-mile snowmobile adventure above Elliston, about 20 miles west of Helena.

Most of the group carried chainsaws on the back of their sleds to clear fallen trees. Though it turned out no logs blocked our path that day, a large, dead tree leaned precariously over the trail on one narrow section, just waiting for a good gust to bring it down. Another dead tree leaned against that one, meaning both would block the trail after the first one toppled.

From a safe distance I watched as the crew went to work on a task they've performed too many times to count. Within minutes, they had taken down both trees and cut up the logs and moved them off the trail. I thought of future cross-country skiers gliding silently through this forest, unaware that a crew of mostly retired motorized sledders had cleared the way.

Loomis says he doesn't really care if other people know that he and his buddies are out clearing trails. As with so many trail-clearing volunteers, the good deed itself is what motivates him. "It's tough work," he says, "but dang if it isn't rewarding."

GOOD-DOERS Members of the Helena Snowdrifters take a break from cutting down a dead tree threatening to topple onto a popular snowsledding and hiking trail in the Helena–Lewis and Clark National Forest.

LEFT TO RIGHT: PAUL N. QUENEAU; PRESTON KERES/USDA; MICHAEL REAVIS

MCC trail crews

Helena motorbike enthusiast Jody Loomis can't recall ever riding the Red Rocks trail system in the Deerlodge National Forest without packing a chainsaw. "It's been hit hard by the pine beetle," Loomis says. "With every windstorm, more standing dead trees fall, and after the high winds we experienced early in 2022, we knew re-opening it would be a huge and possibly multi-year challenge."

Vice president of the Capital Trail Vehicle Association, Loomis helps clear trees from hundreds of miles of trails every summer in the Helena area. In 2022, he and his group received unexpected assistance on one particular route.

Before their trip to clear the Red Rocks trail, Loomis spoke with a rancher who uses the trail system to move cattle to high-mountain meadows to graze. The rancher said a Montana Conservation Corps (MCC) crew had visited earlier that summer to re-open the single-tracks, but he wasn't sure how much trail they'd managed to unlock from the mess of fallen timber.

"As we headed up the North Fork, we found it was cleared all the way to the Middle Fork junction," says Loomis. "And then, heading up the Middle Fork—the most challenging of the three forks—we found that MCC had removed all of the downfall there, too, including many huge logs. That was awesome. It

DIGGING THEIR WORK Using Pulaskis and shovels, an MCC crew carves out a trail in the Bob Marshall Wilderness. Each year, hundreds of young people working in six-person crews build and clear trails, fix bridges, and repair state park facilities.

was obvious how hard they'd worked, and I can't tell you how much pain they saved us."

Turns out those were just a fraction of the more than 27,000 trail-blocking trees statewide that MCC crews took out in 2022.

Modeled after President Franklin Roosevelt's Civilian Conservation Corps (CCC), which helped thousands of unemployed Americans during the Great Depression, MCC launched as a private nonprofit organization in 1991 with support from Montana Fish, Wildlife & Parks and the Human Resource Development councils in Billings, Bozeman, and Kalispell. Within two years, it became one of the nation's first AmeriCorps environmental programs. Now, 30 years later, MCC deploys hundreds of young people every spring, summer, and fall in six-person crews into Montana's forests and prairies to fix bridges, clear trails, repair state park facilities, and do other conservation work as they earn money for education and basic living expenses.

> "It was obvious how hard they'd worked, and I can't tell you how much pain they saved us."

From its home bases in Missoula, Kalispell, Helena, and Bozeman, this small army of workers constructed or repaired more than 1,700 miles of trails, planted more than 5,800 trees, and fought noxious weeds across more than 3,500 acres of wildlife habitat in 2022 alone. But perhaps the most important thing they are building is future conservation leaders.

"The Montana Conservation Corps has always been about developing young people into becoming stewards of our lands and, even more importantly, into engaged members of their communities," says Jono McKinney, MCC president and CEO.

FUTURE FACING An MCC crew clears a trail near Wade Lake in the Beaverhead-Deerlodge National Forest. MCC work builds skills and contacts that often lead to jobs with conservation agencies.

Matt Bowser, who leads volunteer trail work projects for Wild Montana, says the training he got while working for MCC during two summers in college launched his career. That led to a job with the U.S. Forest Service, MCC's largest partner, and eventually Yellowstone National Park, where Bowser worked for six years before moving to the nonprofit sector.

"I owe so much to MCC. It brings six strangers together in the woods who you learn to live and work with. It's a pretty cool experience," Bowser says, adding that he also met his wife while working for the MCC. He now partners with the organization on trail-clearing projects across Montana.

MCC crews have also helped the biking and running group MTB Missoula build several new House of Sky and Wallman trails near the Garden City.

"MCC makes these large projects possible on a much more manageable budget," says Brian Williams, MTB Missoula trails director. "We have great volunteers, but they can only do so much. MCC brings a substantial amount of horsepower to any project combined with a level of know-how and expertise that has taken what we're able to accomplish to a whole new level." ■

—Paul Queneau

REMOVING THE OBSTACLES

Wildlife managers and landowners are using FWP's statewide study of Montana's pronghorn movements to help the prairie grazers travel between critical habitats.

BY ANDREW MCKEAN

While western Montana can lay claim to peak-dwelling bighorn sheep and mountain goats, the state's grassland regions take pride in their own iconic big game superstar: the pronghorn. These elegant speedsters, commonly known as "antelope" or "speed goats," live exclusively in short- and mixed-grass prairie from southern Alberta to central Mexico. Visitors to Montana's vast grassland and sagebrush regions—tourists and residents alike—marvel as they watch pronghorn race across the prairie, emblems of the vast, open American West.

Sadly, some herds in Montana are struggling, and no one knows exactly why.

One factor may be obstacles like roads and fencing. Pronghorn are poor jumpers. They can be blocked by or get hung up on fences easily surmounted by deer. If they can't find a spot to squeeze under a fence, pronghorn can't get past.

Barriers can prevent pronghorn from reaching critical habitat so they can survive heavy winter storms; fencing and other obstacles also deplete energy reserves of pronghorn as they search for areas to cross.

Biologists with Montana Fish, Wildlife & Parks are studying what impediments block pronghorn movement and where those barriers are. An extensive five-year research project that tracks pronghorn movement and habitat preferences in eight distinct herds across the state has ended its data-collection phase. Wildlife scientists are now analyzing the information to learn why some populations have dwindled and others haven't recovered from winterkill or disease.

NOWHERE TO GO Pronghorn expend valuable energy in late winter trying to bypass a woven-wire fence used to contain sheep. The prairie speedsters never adapted to leap over obstacles and are often stymied by fences as they try to reach vital habitat. PHOTO BY ERIK PETERSEN

The unprecedented project, in which over 700 pronghorn from Malta to Dillon were captured and fitted with GPS tracking collars, has elevated the visibility of antelope among ranchers, land managers, and wildlife watchers, and confirmed that pronghorns are simultaneously Montana's hardiest and most fragile big game species.

This focus on Montana's pronghorns is long overdue, says Justin Gude, chief of FWP's Research Bureau. "Compared to other big game species, we know very little about pronghorn," he says. "For whatever reason, they have just not been a priority for research. But then populations as well as hunter opportunity dropped substantially across eastern Montana in the past 15 years—especially after the severe winter of 2010-11—and they still haven't fully recovered in the central part of the state a decade later. Our biologists weren't sure why, and they wanted more solid information as they develop management recommendations including hunting harvest quotas in those areas."

REMOTE PHOTOGRAPHY Thomas Sutton, FWP wildlife biologist in Malta, replaces batteries and memory cards on trail cameras south of Malta this past February. The cameras document pronghorn trying to get through fences along historical migration routes or new journeys to escape deep winter snow. Below: A shot from another trail camera showing pronghorn able to slip under a four-wire fence.

GROWING INTEREST

The study coincides with growing public interest in where wildlife species travel. Over the past decade, scientists across the country have used increasingly smaller and lighter satellite-linked collars to map the remarkable movements of critters, from wolverines in Glacier National Park to bats in Texas. GPS location data allows biologists and landscape ecologists to build detailed maps of seasonal migrations and, just as importantly, identify impediments such as fences, highways, railroads, and rural subdivisions.

The spotlight on wildlife migration grew even brighter in 2018 with Interior Department Secretarial Order 3362, which elevated tracking big game migrations to a national priority. SO3362 provides state wildlife agencies with additional funding for research into identifying obstacles and other funds to ease big game movement and improve habitat.

"With the recent, widespread interest in big game migration, and given that pronghorn need to move a lot and are affected by barriers more than deer and elk, we had a renewed opportunity to initiate this project," says Gude.

The first pronghorn in Montana's study—the Montana Pronghorn Movement and Population Ecology Project—were collared in 2019. The eight Montana project areas (see map on page 34) were selected for their geographic variability, but also because local landowners and public land managers wanted pronghorn-friendly solutions.

Gude says there's significant federal funding available to assist with remediation projects. "Replacing woven wire in key sections with horizontal-strand wire fencing is by far the most beneficial thing that can be done for pronghorn movement, based on our analysis

Andrew McKean, the hunting editor of Outdoor Life*, is a frequent and longtime contributor to* Montana Outdoors.

> "Replacing woven wire with strand wire fencing is by far the most beneficial thing that can be done for pronghorn movement, based on our analysis of the movement data."

of the movement data," says Gude. Other fixes include replacing bottom strands of barbed wire with smooth strands 16 inches off the ground, raising barbed bottom strands to 18 inches up, clipping bottom wires to the ones above them, completely removing unnecessary fencing, and improving wildlife crossings over or under highways.

GPS data maps showing movements of the 700 pronghorn are provided to FWP staff, the Bureau of Land Management, ranchers in the study areas, conservation nonprofits, and interested members of the public. "We're sharing the maps almost in real time," says Dr. Kelly Proffitt, an FWP senior wildlife research biologist who leads the study. "People open their emails and immediately begin clicking around and zooming in and seeing precisely where fences or other obstacles are creating passage problems for pronghorn,"

WHERE DO YOU GO? Above: One of the 700-plus pronghorn fitted with a GPS collar so that scientists can track their movements. Top: A herd races through sagebrush in search of favorable habitat.

CLOCKWISE FROM TOP LEFT: ANDREW MCKEAN; DAWN WILSON; CRAIG MILLER; MONTANA FWP

Proffitt says. "And then they use that data as quickly as possible to make the landscape more permeable."

Martin Townsend, conservation coordinator for the Malta-based Ranchers Stewardship Alliance, says partner landowners in north-central Montana have modified roughly 150 miles of fencing over the past few years using federal, state, and conservation nonprofit grants. More remediation is in store thanks to $6.4 million in new federal funds for Montana big game movement and habitat projects through local Natural Resources and Conservation Service offices. "None of this could have happened without the FWP study," Townsend says. "The maps have been invaluable in attracting funding because they show so clearly the problems and how funding can be used to solve them."

INTERACTIVE MAPS

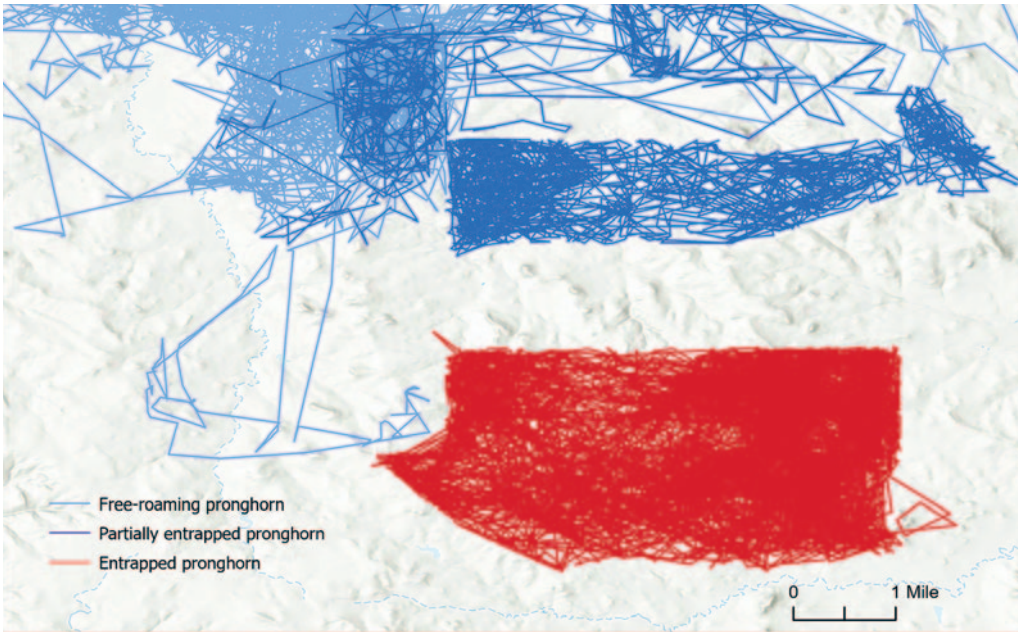
Gude says one early conclusion of the five-year research project is that Montana's antelope don't routinely make long migrations. "All the animals move substantially, just not necessarily in seasonal migrations along distinct corridors," he says. "The exception is that the Madison and Big Hole herds do migrate a long way every year. And we've documented some unexpected movements."

For example, one doe captured on winter range in the Madison Valley migrated to summer range in the Centennial Valley, Gude says, "and then the next year she wintered over by Clark Canyon Reservoir. So it appears she switched winter ranges for some reason."

Gude adds that, because pronghorn tend to wander, "it's relatively easy to identify movement barriers. And, in many cases, you can see the outline of pastures in the GPS plots because the pasture fences are keeping pronghorn either in or out of those areas."

Montana's pronghorn project finished collecting data this past June. Over the next year, FWP biologists will analyze the information and then use results to craft herd-specific management strategies that help struggling pronghorn populations recover.

Proffitt says the research project extends beyond illustrating where pronghorn cross specific landscapes to understanding how they make a living off the land more generally, including habitat preferences and seasonal forage selection.



MAPPING CONSTRAINT Above: The GPS locations of three collared pronghorn in a study area show how two animals were contained within fencing until they found a way out. Trapped within fenced land, the prairie animals can spend days searching for an exit. Right: The eight study areas represent diverse pronghorn habitats across Montana and encompass populations that have shown alarming declines.

"We're trying to identify factors that are limiting growth of some of our central Montana populations," she says. "Is it fawn survival? Adult female survival rates? The reality is that we don't know, but we're looking at fine-scale habitat selection and diet analysis hoping to find out what they are eating and how that might affect survival and reproductive success."

Precise location data may help pinpoint certain types of vegetation that pronghorn require during different times of the year. If they don't have access to that food, either because of land conversion or movement barriers, management prescriptions might include adjusting harvest quotas or hunting district boundaries, or finding ways to reconnect pronghorn with critical forage.

"One thing we know about pronghorn is that, physiologically, the cost of reproduction for a female pronghorn is a lot higher than for a female elk," says Proffitt. "Female pronghorn frequently have twins, and those two offspring can be up to 30 percent of her body mass. So that late gestation period in April and May is, energetically, super-demanding, and her ability to cue on really high-quality and abundant forage is critical during that time of year."

"We're sharing the maps almost in real time. People can see precisely where fences or other obstacles are creating passage problems for pronghorn. And then they use that data as quickly as possible to make the landscape more permeable."

That's also when snowpack is melting and range is starting to green up, Proffitt adds, "so one of the things we're interested in is how the timing of green-up coincides with late-gestation and early lactation periods. If green-up comes late some years, how do female pronghorn respond? Do areas with high fence densities limit their ability to access critical vegetation during that late-gestation period?"

Wildlife managers will also use the new data when creating population models. The computer-generated simulations show how a population's age and sex composition change when scientists plug in various factors such as a severe winter, increased or decreased pronghorn doe harvest, or prolonged drought.

"Montana can't manage its pronghorn populations effectively without strong scientific data," Gude says. "Otherwise it's just a guessing game. This study is helping us remove as much of the guesswork from management decisions as we possibly can."

MOVING RIGHT ALONG Top: Partially electrified woven-wire fencing on the CSKT Bison Range on the Flathead Reservation is elevated to allow passage of pronghorn and other wildlife while containing buffalo. Above: A buck, doe, and fawn run freely across central Montana rangeland.

CLOCKWISE FROM TOP LEFT: JESSE DEVOE/MONTANA FWP; PAUL N. QUENEAU; NICK FUCCI

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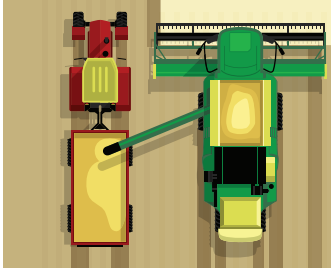

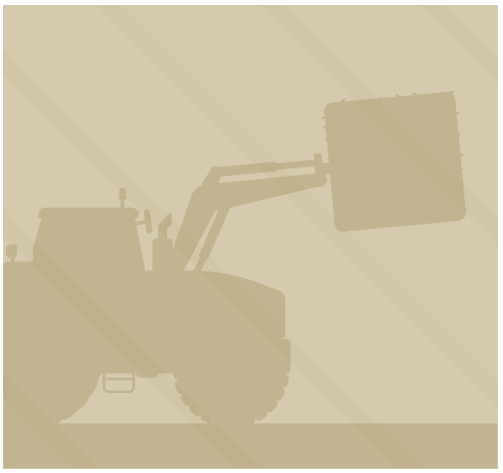

M-WILDLIFE-ACCESS BILL

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BY ANDREW MCKEAN

You don't have to be a Montana farmer or rancher to benefit from the gargantuan federal Farm Bill, which directs national agricultural and food policies in five-year intervals. Up for reauthorization by Congress this fall, the Farm Bill also provides access for hunters and habitat for nearly every species of central and eastern Montana flora and fauna, especially grassland cover for upland birds and wetlands for waterfowl.

The vast majority—some 76 percent—of Farm Bill funding goes to national nutrition programs like school lunches and low-income food assistance. Only about 7 percent is devoted to conservation. But that infusion of funding has an outsize effect in Montana.

As its name implies, the Farm Bill is intended to help agricultural producers. In Montana, that translates to around $1 billion each year in crop insurance subsidies and incentives for farmers doing things deemed in the national interest, like reducing soil erosion, planting flowering plants that attract pollinators, and conserving species-rich riparian habitat.

Payments that flow to Montana's grain, forage, and livestock producers—who receive about a third of their income through Farm Bill components—go a long way toward helping keep farmers and ranchers on the land. The bill's conservation provisions do the same for deer, elk, pronghorn, grouse, and waterfowl.

If you're like most Americans, the massive $1.4 trillion, thousand-page bill is so complicated, opaque, and full of acronyms that it's all but impossible to comprehend. Fortunately, staff with conservation nonprofit groups like Pheasants Forever and state wildlife agencies like Montana Fish, Wildlife & Parks read the fine print. The word from these experts is that the benefits in the latest iteration will continue to enhance your hunting, fishing, and wildlife watching through 2028.

Like most legislation, the final version of the 2023 Farm Bill won't be determined until its final hours, but many provisions have been discussed, debated, and refined over the past year, providing a good look at the big pieces. What follows here is an overview of the components of the 2023 Farm Bill that will significantly affect Montana hunters and other wildlife fans.

Andrew McKean is the hunting editor of Outdoor Life. *He lives with his family on a small ranch near Glasgow.*

PRIVATE-LAND ACCESS

FWP's Block Management Program provides hunters with access to several million acres of private property. The amount of public hunting access to Montana farm- and ranchland made possible through a key federal Farm Bill program can't compare in total acreage, but it's definitely significant.

Shorthanded to VPA-HIP, the Voluntary Public Access-Habitat Incentive Program provides a slug of federal funds—nearly $4 million over the past 10 years for Montana alone—that states use to expand hunting, fishing, and other recreational access to fields and pastures. The program, administered by FWP here in Montana, allows landowners already participating in the Conservation Reserve Program (CRP) to make an additional $5 per acre per year if they manage their CRP in ways that benefit grassland wildlife and they allow free public game bird hunting.

Since 2012, VPA-HIP funds have helped FWP enroll nearly 76,000 acres of CRP in its Open Fields Program, with landowners providing over 150,000 acres of access to bird hunters. Contracts average eight years.

"The point is to have high-quality game bird hunting opportunity on land already enrolled in CRP," says Heather Harris, FWP's wetland/grassland coordinator and the agency lead on Farm Bill provisions.

The 2023 Farm Bill seeks to triple the national investment in access from $50 million in 2018 legislation to $150 million. This means Montana's share of VPA-HIP could increase significantly over the next few years. That excites Harris, especially the habitat-incentive portion of the program that provides for additional hunting opportunities. "We've been focused on access through Open Fields, which is good," she says, "but the ability to incentivize habitat improvement would allow for quality hunting while also helping farmers and ranchers diversify their operations. So we're hoping this is a priority in the new Farm Bill."

CONSERVATION RESERVE PROGRAM

CRP is one of the best-known and most substantial Farm Bill conservation "titles," or major components. Introduced in 1985 and reauthorized in every bill since, it provides incentives for producers to "retire" erosion-prone farmland for 10 or 15 years, planting perennial grasses instead of annual crops. The tall vegetation not only holds soil but also provides habitat for grouse, pheasants, upland whitetails, and nesting waterfowl. In Montana, CRP-enrolled land has fluctuated from more than 4 million acres in the 1990s to less than 2 million acres in 2020, when 750,000 acres of Montana's CRP were not re-enrolled largely because payments for conservation hadn't kept pace with rising commodity prices.

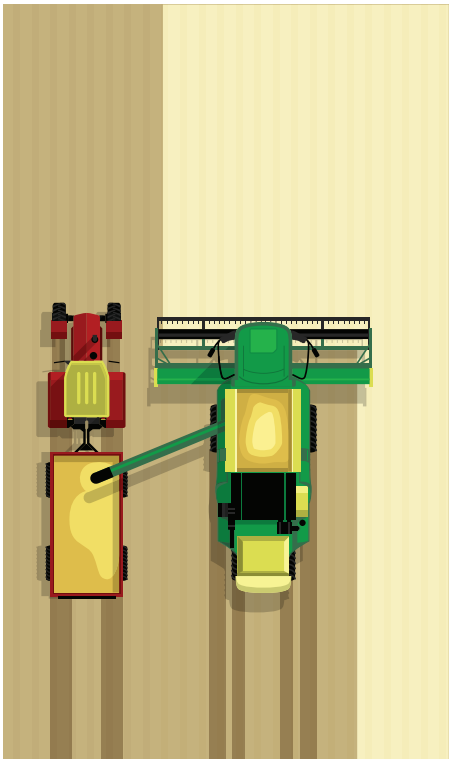
In many states, landowners who can lease their irrigated fields for up to $200 per acre each year to grain-farming neighbors aren't excited by the $80-per-acre lease rate for CRP enrollment, especially since CRP contracts require a 10- to 15-year commitment. (Montana lease rates averaged $104 per acre in 2022.) Consequently, CRP acreage has slipped nationally from around 37 million in the first decade of the 21st century to around 20 million in 2021. Grain prices are spiking because of the war in Ukraine and global weather events, which means that a big increase in CRP acres is unlikely anytime soon.

"You see this pendulum swing, with times of high commodity prices making CRP unattractive, followed by depressed markets and greater interest in CRP" by farmers, says Jim Inglis, director of governmental affairs for Pheasants Forever.

"We'd like to see CRP restored to high levels, but we can't go to Congress right now and ask for 40 million acres," Inglis adds. "So we're going to request as many acres as possible, but with management flexibility that makes it appealing to landowners looking for alternatives to row crops that can make their operations more resilient during these wide swings in weather events that they've been experiencing."

The CRP Improvement Act is a provision in the Farm Bill that would modernize this cornerstone of grassland and soil conservation. If it makes it into the final version, the act would provide cost-share funds for fencing and water projects on CRP grasslands to make grazing—which, when done right, can invigorate prairie vegetation—a more appealing option for landowners. The act would also increase maximum CRP payments from $50,000 to $125,000 to keep pace with

If you're like most Americans, the $1.4 trillion, thousand-page bill is so complicated, opaque, and full of acronyms that it's all but impossible to comprehend.



OPEN FIELDS
FOR
GAME BIRD HUNTERS
Walk-In Hunting Area
• No further permission required to hunt game birds
• No motorized vehicles beyond this point
• No big game hunting without owner permission
Please Act Responsibly:

rising farmland rental rates and values. And it would help producers restore wetlands, trees, and other critical habitat components as part of their CRP enrollment.

In Montana, CRP revisions would also target producers whose grasslands benefit migratory big game species like elk and pronghorn. Additional funding is earmarked to conserve grasslands in the Upper Clark Fork River Basin to improve habitat for aquatic and terrestrial wildlife and reduce sediments, nutrients, and agricultural runoff entering the river and its tributaries.

WORKING LANDS FOR WILDLIFE

Another acronym funded by the Farm Bill is EQIP, the Environmental Quality Incentives Program. It's designed to help farmers, ranchers, and forest owners integrate conservation into working lands and seems tailor-made for Montana.

Administered by the federal Natural Resources Conservation Service (NRCS), which has an office in every Montana county, the program identifies specific local conservation needs, then directs funding to address them. Examples include technical assistance to reduce soil salinity in areas with intensive grain production, seeding subsidies to increase pollinator plantings, and incentives to conserve large blocks of sagebrush to benefit sage-grouse.

> "We'd like to see CRP restored to high levels, but we can't go to Congress now and ask for 40 million acres. So we're going to ask for as many acres as possible."

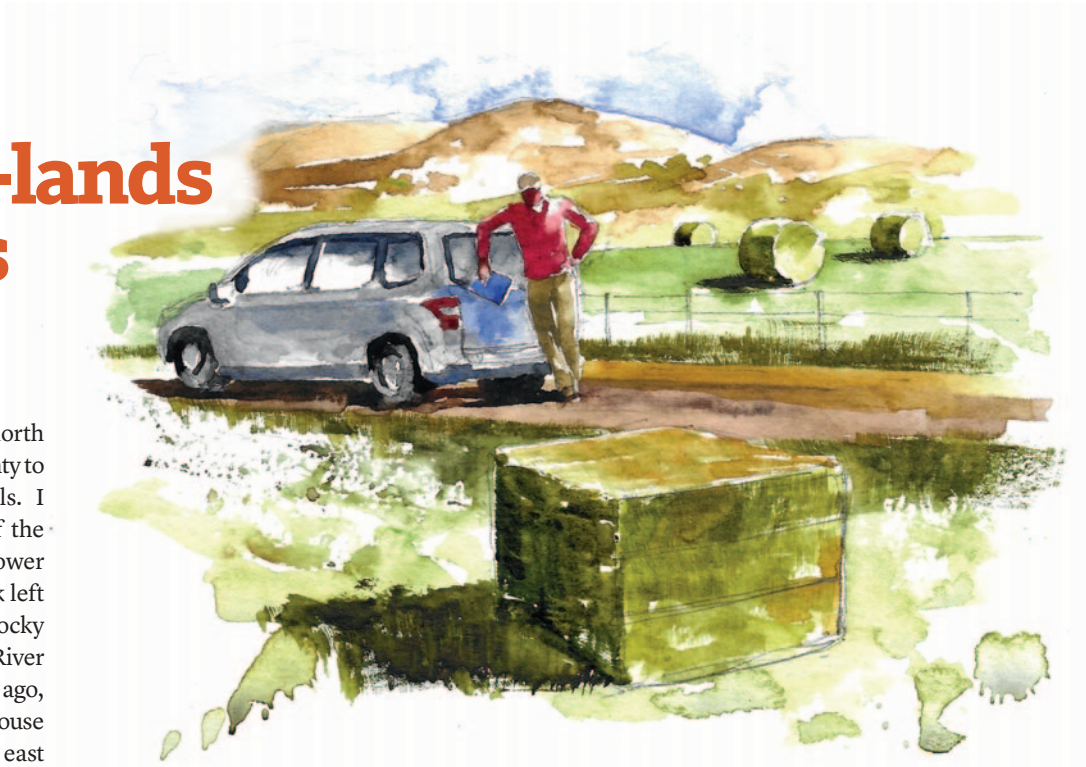
FWP's Harris encourages landowners and conservationists to contact and work with local NRCS offices to identify local priorities. These ideas are then converted into long-range Targeted Implementation Plans (TIPS) that receive Farm Bill funding.

Such on-the-ground, focused conservation planning not only helps Montana hunters, ranchers, and farmers but also helps sell the Farm Bill to a Congress that's losing its appetite for big public expenditures, Inglis says.

"We think it makes sense to talk about the Farm Bill as an investment in rural America," he says. "It's both an economic and ecological safety net for producers, and it makes landscapes more resilient to drought, flooding, and market fluctuations. Plus, every dollar spent by the Farm Bill's conservation components is amplified about seven times, so it's also good for rural economies." Not to mention, of course, rural wildlife.

A working-lands ignoramus

By Tom Dickson



One day last October I headed north from Helena toward Teton County to hunt pheasants and sharptails. I drove along the blue-ribbon stretch of the Missouri River, then continued past Tower Rock State Park, where Lewis and Clark left the prairie in 1805 and entered the Rocky Mountains. To the west I could see Sun River Wildlife Management Area, where, years ago, my wife and I saw our first sharp-tailed grouse on a lek one chilly March morning. To the east was Freezout Lake WMA, where I'd spent many windy December afternoons huddled on the eastern shore of Pond 4 with my old springer, hunting late-season mallards.

Then I drove past a Hutterite colony and looked out at the harvested fields of... of *what*? As I continued north, I began to realize that not only did I not know what those particular crops were, I had no clue as to what *anything* was on the farmland and ranchland I was driving past.

What were those old wooden sheds in the distance, or the rows of round aluminum bins? Why were some hay bales round and others rectangular? I drove past a sign at a ranch entrance that advertised "Registered Polled Angus Steers." What on earth?

Farther along, I passed a herd of horses. Were they stallions? Mares? Geldings? What even *is* a gelding? And the difference between a foal and a colt? No idea.

On it went. By the time I reached my hunting spot, I was ashamed to admit to myself that after two decades of writing about Montana's outdoors, I really only knew about the state's *recreational* outdoors. I could talk knowledgeably about state parks and national forests, federal wildlife refuges and state wildlife management areas, fishing access sites, and school trust lands. I knew where to fish and camp and hunt and mountain bike and cross-country ski. I could tell you where to find huckleberries and how to book a U.S. Forest Service cabin.

But the definition of "silage," or how a combine works, or where Montana farmers export their wheat and barley? Not a clue.

My expertise was (and continues to be) in what could be called Montana's *play* lands. But I know little about the state's *working* lands. This is the majority of Montana's land base where people make a living producing livestock, growing crops, and logging trees. Not to mention the transportation, energy, and communication infrastructure supporting their work: railways, highways, power lines, transformers, cell towers, wind turbines, and natural gas wells.

I drive by these things almost every day, and I comprehend them no more than I do the workings of the James Webb Space Telescope.

For the next few weeks, I kept a list of all the things I saw from my car window and would not have been able to explain to a fifth-grader. Why are some wire fences linear strands and others woven squares? Why are there different crop irrigation devices? How about Montana sheep: Are they raised for lamb chops or wool or both? Who maintains the multi-colored beehive boxes that show up in fields in the middle of nowhere? Why is the ditch along a road called a barrow pit?

And are these much-altered but often grain-rich lands harmful or helpful to wildlife?

After going online for answers, I soon found I needed more than the internet to satisfy my curiosity. Over the past year, I've asked various experts if I could drive around with them to learn about the surrounding landscape: county extension agents, ranchers, farmers, sawmill operators, railroad employees, Montana Department of Transportation staff, and more.

I'm filling a notebook with their answers. When I'm done, I'll share what I learn in *Montana Outdoors*.

Like me, you probably know a lot about where to hike, backpack, kayak, hunt, camp, and fish in Big Sky Country. You're familiar with the scenic highlights that grace tourism calendars—Glacier National Park, the Chinese Wall, Makoshika State Park's badlands, the Yellowstone River in its autumn splendor, and so on.

But I also suspect that, if you grew up in a city or suburb like I did, you may not know much about the places in between the calendar pages—the ordinary, unheralded working landscapes where people carve out a living each day. That, too, is Montana's outdoors, and I think some of us need to know a bit more about it.

Readers: If you spot an unidentifiable structure or device while driving Montana's backroads, send me a description at tdickson@mt.gov and I'll see if I can learn what it is.

ILLUSTRATION BY STAN FELLOWS

Tom Dickson is the Montana Outdoors *editor.*

Meadow vole

Microtus pennsylvanicus

By Shane Sater

SCIENTIFIC NAME
Microtus combines the Greek words *micro* (small) and *otus* (ear), while *pennsylvanicus* refers to the state where the first specimen was scientifically identified.

LEA FRYE

In a cemetery near Helena there's a dense stand of blue spruce trees often inhabited by a pair of nesting great horned owls. Under the conifers, if you look closely, you may see furry gray pellets regurgitated by the raptors. Pull one apart, separating tiny bones and skulls from the wads of fur, and you're likely to find the remnants of a meadow vole.

I appreciate voles for the critical part they play in the diet of owls, hawks, and many other animals. At the same time, I find it much harder to like them when they girdle a fruit tree under the cover of winter snow. But love them or hate them, we're stuck with these small rodents—ubiquitous, important parts of the Montana landscape.

IDENTIFICATION

One of eight vole species in Montana, the meadow vole looks like a stubby-tailed mouse. Both voles and mice are mostly gray or brown and live and hide in grassy areas, but mice have much longer tails, and many have contrastingly white bellies. Shrews, small mammals of an entirely different order from rodents, also have short tails, but their snout is much pointier than a vole's.

Distinguishing a meadow vole from a montane vole or prairie vole is a challenge, requiring close study of the teeth of a live specimen or the remains recovered from an owl pellet. But because the meadow vole, found statewide, is Montana's most common vole species, there's a good chance you've seen one scurrying underfoot.

HABITAT

Look for meadow voles in wet areas with dense grass cover: hayfields, irrigated pastures, meadows along rivers and near forest streams.

Montana's other voles mostly live in different habitats. The southern red-backed vole, for example, likes moist, old forests with ferns, mosses, and downed logs. The sagebrush vole digs extensive burrows in dry areas with sagebrush and rabbitbrush. The montane vole is usually found in dry grasslands on mountain slopes. Prairie voles prefer dry sites throughout eastern Montana.

PREDATION

When rough-legged hawks sweep down from the Arctic to overwinter in Montana each fall, they primarily hunt voles—close relatives of the lemmings that make up the raptors' diet on the northern tundra. When great horned owls feed their fluffy chicks in early spring, voles are on the menu. In the summer, voles are hunted by kestrels and red-tailed hawks, as well as rattlesnakes, garter snakes, weasels, and shrews.

REPRODUCTION

Because they are prey for so many predators, meadow voles must reproduce quickly and frequently. Breeding generally happens anytime from early spring through late fall, and pregnancy lasts just three weeks. Within two weeks after birth, the female weans her litter of four to six young, raised in a spherical nest of fine grasses on the ground.

When the young meadow voles disperse in search of a new home, they are especially vulnerable to predators: Nearly 90 percent die within their first month. If a young vole manages to survive three weeks on its own, it's old enough to mate and start the cycle over again.

DIET AND BEHAVIOR

For meadow voles, thick grasses provide food, nesting sites, and shelter from predators. The rodents eat a wide variety of plants but favor grasses. In winter they make tunnels beneath the snow among dead grasses and shift their diet to seeds, roots, underground fungi, and, to the frustration of homeowners everywhere, the thin, delectable bark of fruit trees.

CONSERVATION STATUS

Meadow vole populations rise and fall cyclically, typically in two- to five-year intervals. Why and how these cycles happen remains a mystery of ecology. But despite the unexplained population fluctuations and the intense hunting pressure of hungry hawks, snakes, owls, and other predators, meadow voles remain common and widely distributed in Montana.

Shane Sater is a writer and field naturalist in Helena who writes the Wild with Nature blog and podcast.

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Whether it's by boating, hiking, fishing, mountain biking, wildlife watching, or **bowhunting for elk in the Beaverhead-Deerlodge National Forest,** Montana is a state where everyone can find their own special way to connect with the natural world. Around here, **the outside is in us all.**

PHOTO BY JACKSON BLAND

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